



THE CURRENT SITUATION OF CHILDREN'S NURSING TRAINING IN SOUTH AFRICA

By

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Section 0: Preamble

Abstract

The high rate of Infant and child mortality, much of which is preventable, especially in developing countries, continues to be a global public health concern. Improving the numbers and competencies of child nurse professionals is vital for health system strengthening. Child nurses are important group of health professionals who are responsible for delivering effective health care services to infants and children at all levels of the health system, yet their training situation is being under-investigated. It is documented in various literatures that the high rate of under-five morbidity and mortality in South Africa can be prevented by strengthening the training needs of child nurses, in order to ensure that their competencies adequately align with the health needs of children who present at the health facilities.

This dissertation is organized into three parts.

Part A is the research protocol which outlines the background and the study methodology. Mixed methods comprising qualitative and quantitative methods is adopted for the study. Documentary review and self-administered structured questionnaire are used for the data collection. Defined inclusion and exclusion criteria are used to identify and select the Nursing Education Institutions and key informants suitable for the study. Documentary review is used to extract secondary data that identifies the South African policy and legislative framework for general nursing and children nursing in particular. Documents will include appropriate policy and strategy documents, including the document from the Nursing Educators Forum that was held at Groote Schuur Hospital in December 2016.

In addition, primary data collection will be done using a self-administered structured questionnaire where key informants will address a combination of qualitative and quantitative questions. The self-administered questionnaire is used to thoroughly investigate the current situation of children's nursing training in South Africa, with the aim of identifying the numbers trained annually for a five-year period and the curriculum foci of children nursing training across the nursing institutions that host children's nursing programs in South Africa.

Part B is the literature review which examines the preventable causes of under-five mortality in South Africa and the need to train up suitable, well qualified and competent Child Nurse Professionals needed to improve the health of infants and children in South Africa.

Part C is the journal article manuscript which begins with the background and the study methods, followed by the results, discussion and conclusion.

The result indicates that a total of five relevant policy and strategy documents were identified for the documentary review. Of the five documents, three documents suggest strategies for improving the nursing education and training programmes in South Africa. The strategies include increasing the supply of the nurse specialists, transforming all nursing colleges to Higher Education Institutions and improving the curriculum guidelines of the nursing programme, in order to ensure that the competencies taught to the nurses aligns with the health care needs of the communities. The two other documents posit the primary roles of the nursing professionals, which is to provide effective care and respect the rights of the health care users.

The findings from the documentary review reveals that South Africa has a nurse-based health care system and more nurses are being produced to deliver high quality care to the population. More so, the findings from the documents show that more supply of nurses are still needed, especially the nurses trained in a specialized field of practice such as those trained in child nursing. The need to review and strengthen the nursing curriculum is also prioritized as part of improving the nursing education in South Africa.

For the primary data collection, out of the seven accredited nursing institutions that conducts children's nursing training in South Africa, five respondents from five institutions completed and forwarded their questionnaires. The completed questionnaires provided details on the profile of children's nursing training, including the annual numbers of child nurse trainees and graduates over a five-year period and details of their curriculum components.

The results from the questionnaire survey shows that the number of child nurse trainees and those who successfully graduated were very impressive, although the number of child nurses produced annually are still too few to address the child health needs in South Africa.

In addition, the curriculum of the children's nursing training across the five institutions were similar and contains topics that are capable of equipping the child nurses with the relevant skills necessary for improving the health of infants and children in South Africa. However, they exist some variations in the extent the courses were covered by the institutions, as well as variations in the way the courses were conveyed to the nurse learners. For example, some courses were covered to a small degree in some institutions, while other institutions covered it fully. This suggests that the curricula of children's nursing training in South Africa needs to be reviewed and standardized, in order to ensure it's in line with the health care needs of children in the country.

The dissertation is likely to increase the knowledge of the current training of child nursing in South Africa, and also identify gaps for future research. In addition, the dissertation provides a better understanding of the curriculum foci of children's nursing training in South Africa, which can help inform the human resource training plans for child health nursing in the country.

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Plagiarism Declaration

I, Uchenna Nneka Chukwu (CHKUCH001), hereby declare that the work on which this dissertation/thesis is based is my original work (except where acknowledgements indicate otherwise) and that neither the whole work nor any part of it has been, is being, or is to be submitted for another degree in this or any other university.

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----March 2017----

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Section 0: Preamble

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Acronyms and Abbreviations

AIDS	Acquired Immune-Deficiency Syndrome
ART	Anti-Retroviral Treatment
CNS	Clinical Nurse Specialist
COMMiC	Committee on Morbidity and Mortality in Children Under-5years
CHIP	Child Health Care Identification Programme
ENs	Enrolled Nurses
ENA	Enrolled Nurse Auxiliary
EC	Eastern Cape
FS	Free State
FUNDISA	Forum of University Nursing Deans in South Africa
GP	Gauteng Province
HIV	Human Immunodeficiency Virus
HRH	Human Resource for Health
IMCI	Integrated Management of Childhood Illness
KZN	Kwazulu- Natal
LP	Limpopo
MP	Mpumalanga
MDGs	Millennium Development Goals
NW	North West
NC	Northern Cape
NEIs	Nursing Education Institutions

NQF	National Qualification Framework
NMR	Neonatal Mortality Rate
PMTCT	Prevention of Mother to Child Transmission of HIV
PMR	Perinatal Mortality Rate
PN	Professional Nurse
RNs	Registered Nurses
SDGs	Sustainable Development Goals
SANC	South African Nursing Council
SA	South Africa
SSA	Sub-Saharan Africa
UN	United Nations
U5MR	Under-5 Mortality Rate
UHC	Universal Health Coverage
WHO	World Health Organisation
WC	Western Cape

Part A: Research Protocol

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Introduction

Infant and child mortality is a worldwide public health priority as reflected in the Sustainable Development Goals (SDGs) adopted by the United Nations (UN) (WHO, 2015). The target of the SDGs is to end new-born and child preventable deaths by 2030, to at-least 25 deaths per 1000 live births for under-5 mortality rate (U5MR) and 12 deaths per 1000 live births for neonatal mortality rate (NMR) respectively (WHO, 2015).

In Sub-Saharan Africa (SSA), including in South Africa (SA), child mortality rates escalated out of control in the 1990's due to the rapidly escalating Human Immunodeficiency Virus (HIV) and Acquired Immune-Deficiency Syndrome (AIDS) epidemic (South Africa Department of Health, 2013; Whiting, 2013). The World Health Organisation (WHO) estimated that children born in SSA are 16 times more likely to die before reaching his or her fifth birthday compared to a child born in a high-income country (WHO, 2015).

The progress of child survival in SA is undesirable, especially when compared with other low and middle income countries where the U5MR is falling progressively (Sanders et al., 2009; Coovadia et al., 2009). Countries such as Peru (25 deaths per 100,000 live births), Egypt (35 deaths per 100,000 live births) and Morocco (37 deaths per 100,000 live births) have lower child mortality rates compared to SA (69 deaths per 100,000 live births) (Coovadia et al., 2009). This is despite estimates that in 2006, the South African government spent seven times more money on health than Malawi, and 17 times more than Madagascar, two countries that have reduced child mortality by more than one third between 1990 and 2008 (Sanders et al., 2009).

However, SA's high U5MR began to decrease due to up-scaling of various health programmes, in particular HIV-related programmes such as the prevention of mother-to-child transmission of HIV (PMTCT) and eventually anti-retroviral treatment (ART) provisioning (South Africa Department of Health, 2013; Whiting, 2013).

Status of Child Health in South Africa

Infant and child mortality estimates serve as a measure for monitoring trends of child survival, as well as the quality of health services delivered at different stages in a child's life within any given society (McKerrow et al., 2010). Monitoring child mortality rates however, poses a challenge for low and middle income countries (Nannan et al., 2012). The lancet 'WHO Counts' series highlights the fact that vital registration of child mortalities is often incomplete, with many deaths among poorest families, not been recorded effectively (Setel et al., 2007; Nannan et al., 2012).

Child mortality indicators and rapid mortality surveillance in SA from 2009-2011 is illustrated in table 1 below:

Table 1: Child Mortality Indicators and Rapid Mortality Surveillance in SA from 2009-2011.

INDICATOR	2009	2010	2011
Under-5 mortality rate (U5MR) per 1,000 live births	56	53	42
Infant mortality rate (IMR) per 1,000 live births	40	37	30
Neonatal mortality rate (NMR) (< 28 days) per 1,000 live births	14	13	14

Source: (Nannan et al., 2012; South Africa Department of Health, 2013).

Notably in table 1, the NMR remain stagnant and the IMR and U5MR have still not reached the intended two-thirds reduction as required by the Millennium Development Goals (MDGs).

Estimates from the Actuarial Society of South Africa's 2003 model, suggests that after a steady increase from 60 deaths per 1,000 live births in 1990 to 73 deaths per 1000 live births in 2000, SA has been experiencing a decline in under-five deaths, reaching 67 deaths per 1000 live births in 2008 respectively (Sanders et al., 2009). While progress had therefore been made at improving child health mortality outcomes in SA, there is still a dire need to continue strengthening health systems for children under-five years of age.

SA is a society characterized by huge inequities which is rooted in the political history of the country, and this has had a devastating effect on the health status of the populations (Coovadia et al., 2009; Delobelle, 2013). The roots of a dysfunctional health system and the collision of the epidemic of communicable and non-communicable diseases in SA can be found in policies from colonial subjugation, apartheid dispossession, to the post-apartheid period (Coovadia et al., 2009).

Causes of Child Deaths

The primary causes of death among children under five years of age in SA are HIV/AIDS, pneumonia, preterm birth complications, diarrhoea, birth asphyxia, tuberculosis and malnutrition (Sanders et al., 2009; South Africa Department of Health, 2013; Whiting, 2013). The complications that arise from prematurity and low birth weight are the leading causes of death in newborn babies, while most neonatal deaths that occur in big babies result mostly from birth asphyxia (Bamford, 2012). Approximately one third of childhood deaths are linked to malnutrition, especially in the African region, and while one child dies every minute from malaria, over 90% of children living with HIV are infected through mother to child transmission (WHO, 2015). Pneumonia and diarrhoea remain the two leading causes of death in children (McKerrow et al., 2010; Bamford, 2012). Infant and child mortality in SA vary across provinces and this is due to the huge variation in socio-economic status, health services and child health state in the country (McKerrow et al., 2010).

The provincial U5MR due to pneumonia and diarrhoea in 2011, broken down by province, are shown in table 2.

Table 2: Diarrhoea and Pneumonia in Children Under- five years by Province: Incidence, Admission and Death Rates by 2011 in SA.

Province	Incidence of diarrhoea per 1000	Admission for Diarrhoea per 1000	Mortality Rates (%) caused by Diarrhoea	Incidence of Pneumonia per 1000	Admission for Pneumonia	Mortality rate (%) caused by Pneumonia
Eastern-Cape (EC)	12.5	7.6	8.3	59.5	9.1	5.2
Free-State (FS)	7.2	7.7	8.2	94.0	9.2	7.0
Gauteng Province (GP)	13.9	3.1	5.0	57.3	5.3	4.2
Kwazulu-Natal (KZN)	22.7	7.4	5.0	155.0	9.0	3.8
Limpopo (LP)	16.2	5.7	9.0	55.1	10.1	5.8
North-West (NW)	10.8	8.3	4.9	76.7	9.0	5.1
Northern-Cape (NC)	11.9	16.9	3.7	95.8	15.1	3.0
Western-Cape (WC)	16.7	14.3	0.2	72.0	13.6	0.4
Mpumalanga (MP)	9.3	4.8	9.9	42.7	6.8	8.3
South Africa (SA)	15.2	7.2	5.2	84	8.9	4.3

Source: (South Africa Department of Health, 2012; Bamford, 2012)

The above figures in table 2 represent routine data from facilities and this data shows that variations in the reported incidence and admission rates reflects inequitable access to health care services and differences in case identification (Bamford, 2012; South Africa Department of Health, 2012). Most of the increase in U5MR has been attributed to deteriorating quality of health care and a maturing HIV pandemic, and the declining trend seems to coincide with the introduction and roll-out of PMTCT and ART health programmes (Sanders et al., 2009).

Perinatal mortality rate (PMR) by province in 2011 is shown in table 3, and depict similar levels of inter-provincial inequity in SA.

Table 3: PMR in SA by Province, 2011

Province	Perinatal Mortality (Deaths per 1000 Deliveries)
EC	37.1
FS	41.0
GP	30.9
KZN	31.6
LP	32.3
MP	33.6
NW	35.4
NC	36.9
WC	23.1
SA	32.4

Source: (South Africa Department of Health, 2012; Bamford, 2012)

These national figures in table 3 show a marked interprovincial inequity, with vast difference between the WC (the lowest PMR of 23.1) and the FS (highest PMR of 41.0).

The Role of Nursing in Mitigating Preventable Causes of Child Deaths

Many causes of child deaths are preventable and can be mitigated by improving the socio-economic conditions in which children and their families live (South Africa Department of Health, 2011). However, a certain proportion of child deaths are related to inadequate health personnel and poor quality of care by health services, both at the primary level, as well as in hospital services (South Africa Department of Health, 2014). Therefore, access to skilled health care providers, especially nurses, is of paramount importance. Skilled nursing staff, in particular those trained in children's nursing, combined with good quality health care services, can make a huge difference in the health outcome of infants and children in SA (Coetzee, 2014; McKerrow, 2014).

An audit of childhood deaths in public hospitals stated that approximately a quarter of infants and child mortality are avoidable with the intervention of skilled child nursing professionals (Stephen et al., 2011; McKerrow, 2014; Coetzee, 2014). The Committee on Morbidity and Mortality in Children Under-5 years (CoMMiC) in its first triennial report, suggests the need to strengthen pre-service, postgraduate and in-service training in child health and paediatrics and provide competencies required to care for children in the health system (McKerrow, 2014).

The health workforce is a crucial component of a well-functioning health system, and within the health system are sub-systems such as service delivery, health workforce, information, medical products, financing, governance, vaccines and technologies (WHO, 2007). Human resources for health include health service providers such as doctors, nurses, midwives, pharmacists, community health workers, and health management and support workers (WHO, 2007). A well performing health workforce is one that

works in ways that are responsive, fair and efficient to achieve the best health outcomes possible, given the available resources and circumstances (i.e. there are sufficient staff, fairly distributed, responsive, competent and productive) (WHO, 2007). As demonstrated in the WHO Health Systems Framework in Figure 1, the human resources for health play a major role in improving the health of the whole populations.

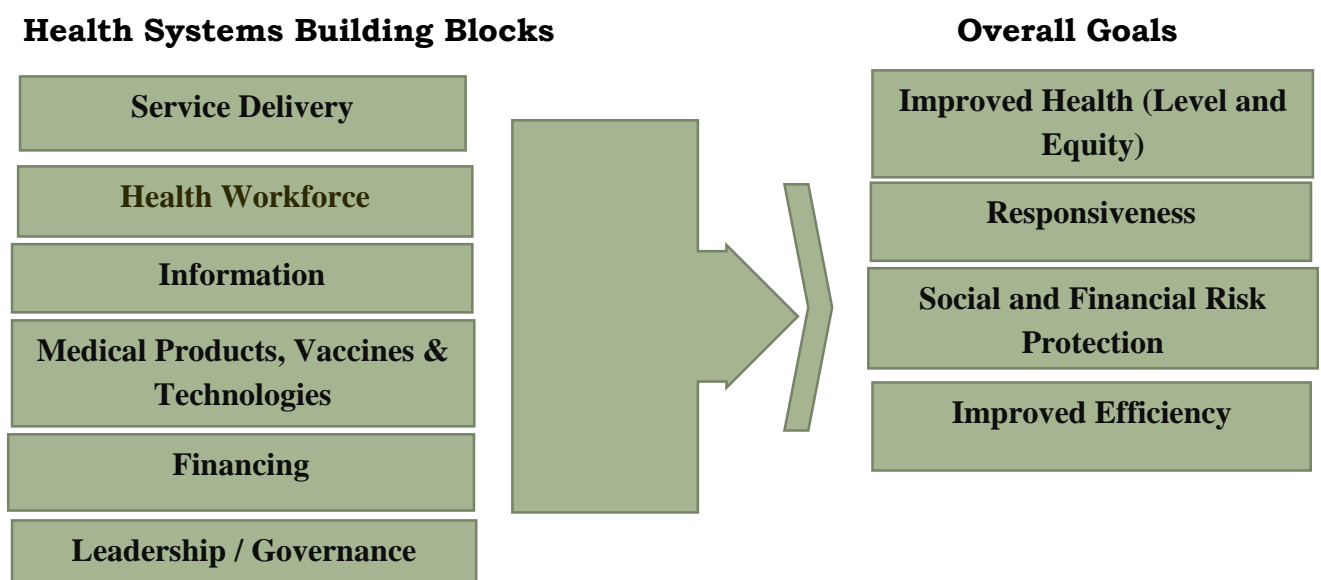


Figure 1. WHO Health Systems Framework (WHO, 2007)

From the WHO frame work in figure 1, it is seen that six elements make up the health systems. Every element in the health systems framework is considered to be important and constitutive of any health system. Therefore, without the health workforce, the health system cannot function effectively (Spero et al., 2011).

Nurses are instrumental in the implementation of health care services and they form the largest proportion of the health workforce (Smith, 2014). Therefore, improving their skills and numbers can impact positively on other elements that make up the health systems building blocks. The creation of adequate and competent health workforce such as child nursing professionals, is essential for health systems strengthening. This is because the health system consists of all people engaged in actions whose primary

intent is to improve health (WHO, 2014). For child health specifically, if the current decline in U5MR is to be maintained and improved upon in SA, it is necessary to develop a cadre of suitable skilled child nurses across all levels of care, and this requires the review of the current children's nursing training in the country (McKerrow, 2014; Coetzee, 2014).

However, the shortage of skilled nurses has been identified as an obstacle in realising an effective health care system (Gillespie et al., 2006; Reynolds et al., 2013; Coetzee, 2014). A presentation by Econex on the number of professional nurses per 100,000 people at the Hospital Association of SA conference in 2014, shows SA at 121 nurses per 100,000 people, which is roughly in line with other countries such as India (114 nurses per 100,000 people) but far behind the Russian Federation (745 nurses per 100,000 people), UK (824 nurses per 100,000 people) and Switzerland (1660 nurses per 100,000 people) (Waltson, 2015). Therefore, the number of nurses is substantially lower in SA compared to developed countries (Waltson, 2015).

This suggests the need for SA to train up sufficient numbers of skilled health practitioners, especially those trained in paediatrics and child health who can deliver high standard health services to children in the health care settings.

Nurse Training in South Africa

Within the nursing workforce, there are nurses with a variety of forms of training, leading to different categories of professional registration, some arising from historical forms of training no longer being offered (Klopper and Uys, 2013). Nursing training ranges from a one-year hospital and college based programme leading to registration as Enrolled Nurses (ENs) to a four year programme at undergraduate level leading to registration as Registered Nurses (RNs) (Subedar et al., 2005; Klopper and Uys, 2013). RNs can continue their studies to become a Registered Nurse Specialist. The categories of nurses relevant to child nursing are paediatric nursing and paediatric critical care nursing.

According to the South African Nursing Council (SANC) register in 2004, there were 98,740 RNs, 35, 266 ENs and 50, 703 Enrolled Nurse Auxiliary (ENA) who were eligible to practice in SA, and between 1996 and 2004 the total number of nurses on the SANC registers increased by 11,939 (6.9%); professional nurses increased by 10,707 (12.2%), ENs by 2,096 (6.3%) and ENA declined by 864 (1.6%) respectively (Subedar et al., 2005).

Children's Nursing Training

Child nurses are professional nurses who care for infants and children in a variety of health care settings (SANC, 2012). Internationally, the term 'children's nursing' is increasingly being used to describe this training, while in SA the training goes by a variety of names, which includes: 'paediatric nursing', 'child health nursing' or simply, 'children's nursing'. Whilst the curriculum focus may differ somewhat, all graduates from relevant post graduate level programmes are registrable with the SANC as a Child Nurse Specialist (CNS) (SANC, 2012; Coetzee, 2014). The term 'Children's Nursing' is used throughout this document to refer to all instances of the practice of caring for children by RNs who have undergone additional specialist training leading to registration with the SANC as paediatric nurses and paediatric critical care nurses.

Coetzee 2014 posits that effective children's nursing training doesn't only have to do with increasing the numbers trained, although it is critical to have sufficient numbers of skilled child nurses, it is also crucial to ensure that these nurses have the requisite knowledge and skills to enable them to address the particular health needs of children in SA (Coetzee, 2014). It is therefore important to know what the current curricula for children's nursing training contain and whether they are equipped to work across the different levels of care with the conditions that children are likely to present with at the health facility.

Based on the current disease profile of children in SA, the curriculum content for basic nurse training needs to emphasise routine neonatal care, growth

and nutrition (including growth monitoring and promotion), feeding and malnutrition, Integrated Management of Childhood Illness (IMCI) and key community health programmes, resuscitation and emergency care, as well as clinical governance and quality improvement (McKerrow, 2014). These goals are best achieved by ensuring all nurses in training are exposed to those programmes already being implemented in the public health services, across a training platform that includes community, district and regional levels of service delivery (McKerrow, 2014).

In the SA's context, a CNS is a Professional (Registered) Nurse who has obtained a Postgraduate Diploma Qualification in Child Nursing Science, also the education and training must have been conducted at a Nursing Education Institution (NEI) accredited by the SANC (SANC, 2012). The SANC accredited programmes include diploma programmes that usually last one year and follow a four- year undergraduate degree or diploma in general nursing, and for those who would prefer to specialize in children's nursing, can proceed with the postgraduate diploma programme in children's nursing which may be offered at post-basic or advanced diploma- level at the current National Qualification Framework (NQF) level 7, or as postgraduate diplomas at NQF level 8 respectively (SANC, 2012; Coetzee, 2014). After receiving the qualification as a CNS, the child nurse can perform roles such as preventive, curative, rehabilitative or promotive health care services in the clinics, specialised children's hospital, private health care centres or tertiary hospitals (SANC, 2012).

The SANC is the national body entrusted to set and maintain high standards of nursing education and practice in SA and are involved in the monitoring of nursing standards by:

- Registering nurse practitioners, therefore permitting them to practise as nurses
- Accrediting new NEIs and nursing education programmes
- Inspecting the NEIs and clinical facilities

- Constantly reviewing nursing education and training to be in line with the needs of SA and
- Providing counselling and guidance to the nursing profession regarding the implementation of the nursing education and training policies.

Although the institutions recognised by the SANC as providing nurse training were required to submit their curricula for approval at the outset, the SANC does not require institutions to submit information for ongoing review (SANC, 2016). It is therefore not known to what extent curricula have been revised since they were first submitted. According to Coetzee 2014, four universities in SA are accredited by the SANC to train nurses in children's nursing, with only one university accredited to offer children's critical care nursing and a number of colleges still offer the post-basic diploma programme in children nursing at NQF 7 (Coetzee, 2014).

From information gathered from the Forum of University Nursing Deans in South Africa (FUNDISA) directory, it is believed that seven NEIs in total are currently offering children's nursing programmes in SA. However, there is not clear and consistent documentation and synthesis on a national scale of the profile of the child nurse trainees, how many child nurses are being trained each year, what they are trained on and whether the numbers that are being trained are sufficient to respond to child health nursing requirements in SA. This therefore makes human resource planning for child nursing very difficult in SA. For that reason, this study seeks to examine the current situation of children's nursing training in SA by focusing on the NEIs that train child nurses, including the numbers trained in the past five years and the curriculum content offered by the nursing institutions. This is an interesting and substantially relevant research topic because appropriately trained and skilled child nurses can significantly contribute to the prevention and treatment of childhood diseases in SA.

Problem Statement

There are large numbers of children who require good quality health care in order to address range of diseases, many of which are preventable. Some children require advanced and complex health care that require more than basic nursing and medical skills. Nurses are mostly the frontline health workers at all the levels of care (Reynolds et al., 2013; Blaauw et al., 2014). They also play a crucial role in the hospital care of children, as they are at the frontline of caring for children in hospitals and in many respects, are the dominant professionals in the care of hospitalised children. Therefore, there is urgent need for nurses throughout the health care system with more advanced skills in nursing children, such as nurses trained in paediatrics or child health nursing.

In order to properly plan for child nursing workforce in SA, it is important to know what the children's nursing requirements are, what they are learning and whether current training institutions are training adequate numbers and using appropriate curriculum that will equip the child nurses to address the health needs of children in SA.

The CoMMiC believes that the curriculum for nurses related to children's nursing in SA is site-specific, lacks uniformity and is often incomplete (Coetzee, 2014). Therefore, in strengthening the curricula of children's nursing training, it is important to keep in mind the vast disparities in socio-economic circumstances, health services and health status of children in the various provinces in SA and also develop a curriculum that will equip the child nurses to respond to the evolving needs of children who live in these varied circumstances.

Study Area Background

SA is well known as a 'rainbow nation', because of its wide diversity in cultures, languages and religious beliefs. SA comprise of sixteen different ethnic groups and eleven official languages (Klopper and Uys, 2013). SA is situated at the southern tip of the African continent which is made up of nine

provinces with its own legislative and executive council. They include; Western Cape (WC), Eastern Cape (EC), Northern Cape (NC), Mpumalanga (MP), Gauteng (GP), Limpopo (LP), North West (NW), Free State (FS) and Kwazulu-Natal (KZN) (Klopper and Uys, 2013).

In mid- 2013, SA total population was estimated at 53 million people, of whom 18.6 million were children (under 18years) (Meintjes et al., 2015). Therefore, children constitute 35% of the total population in SA (Meintjes et al., 2015). In 2015, statistics SA estimated the mid-year population as 54.96 million and about 30.2% of the population was younger than 15 years (www.southafrica.info/about/people/population). Table 4 will be used to show the total number of children living in SA, as well as child population numbers by province from 2008 to 2013.

Table 4: Number of Children in South Africa and by Province from 2008-2013

	2008	2009	2010	2011	2012	2013
SA	18,679,000	18,607,000	18,527,000	18,541,000	18,574,000	18,601,000
WC	1,757,000	1,764,000	1,771,000	1,814,000	1,873,000	1,867,000
MP	1,492,000	1,474,000	1,460,000	1,473,000	1,558,000	1,547,000
NW	1,281,000	1,277,000	1,276,000	1,282,000	1,273,000	1,284,000
NC	439,000	435,000	430,000	435,000	418,000	416,000
EC	2,821,000	2,763,000	2,684,000	2,687,000	2,696,000	2,676,000
FS	1,072,000	1,067,000	1,071,000	1,060,000	925,000	920,000
GP	3,202,000	3,238,000	3,310,000	3,336,000	3,529,000	3,574,000
KZN	4,281,000	4,277,000	4,267,000	4,214,000	4,071,000	4,092,000
LP	2,334,000	2,313,000	2,258,000	2,241,000	2,230,000	2,224,000

Source: (Meintjes et al., 2015)

It can be seen from table 4 that KZN, EC and LP accommodates almost half of all children in SA, and a further 19% of children live in GP which is mainly a metropolitan province and 10% of children in the WC (Meintjes et al., 2015). There has been striking changes in the provincial child populations over time. While there has been a decrease in the number of children living in the FS, EC, LP, KZN and NC provinces, the number of children living in GP and WC has risen by 24% and 14% respectively. As indicated earlier in the document,

SA is characterized by huge inequities and this manifest in significant inequities in child health status across provinces.

Purpose of the Study

The purpose of this study is to thoroughly investigate and describe the current situation of children's nursing training, so that it could help inform better human resource training plans for child health in SA, with the ultimate intention of strengthening facility-based health care service provisioning (hospitals more specifically) for children.

Research Question

What is the current situation of children's nursing training in SA?

Sub-Questions

1. What is the current policy and legislative framework of children's nursing training in SA?
2. Which institutions are offering accredited children's nursing training?
3. How many children's nurses are being trained per year and what is the profile of trainees?
4. To what extent is current training aligned with national child health priorities and strategies?
5. Is SA training enough child nurses?

Methodology

Data Collection

This study, which is a situational analysis of children's nursing training in SA, employs mixed methods to address the research questions. The study

combines primary data collection with an analysis of key secondary data sources. Primary data will be done using a structured self-administered questionnaire where key informants will address a combination of quantitative and qualitative questions. The questionnaire will be developed by applying the basic principles that informs a good questionnaire design. Purposive sampling method will be used to sample the nursing institutions and key informants for the study. The secondary component of the study is a documentary review, where a thematic analysis will be employed for analysing the documentary content. Documents for the review will include appropriate policy and strategy documents that identifies the legislative and policy framework of nursing education and training in SA. The workshop minutes of a sentinel Nurse Educator Forum that took place in Groote Schuur hospital in December 2016 will be included as an important secondary data source.

Question 1

The policy and legislative framework for children's nursing training in SA will be examined through the documentary review, by sourcing relevant policies and laws that outline the specifications for nursing training and then extract that which relates specifically to children's nursing training in SA.

A data extraction sheet will be used and applied to each document and the data will be entered into an excel spreadsheet. Data will be grouped and synthesised according to the questions as outlined in the data extraction sheet.

Question 2

This question will be addressed by identifying accredited NEIs through available sources such as the FUNDISA directory and SANC website, as well as from key experts who are nursing educators at the Red Cross War Memorial Children's Hospital in Cape Town and who have knowledge of the existence of children's nursing training courses. Purposive sampling will be used to sample the NEIs that host children's nursing training, and one key informant who is a nursing educator with expert knowledge in child health nursing will be purposively sampled from each NEIs for participation in the study.

Questions 3 and 4

These questions will be addressed through self-administered structured questionnaires which will be delivered to the purposively sampled nursing educators at the seven NEI's accredited by SANC to offer programmes leading to registration as a specialist in child nursing or children critical care nursing. After establishing the key informants who are the nursing educators at the relevant NEIs using the FUNDISA directory, the study proposal, consent forms and ethical approval form will be sent to them via e-mail. This will be followed by data collection using a self-administered structured questionnaire to show a real life representation of the current training numbers and curriculum content of children's nursing training in SA.

One key informant who are nursing educators with expertise knowledge in child nursing will be identified from each of the purposively sampled seven training institutions and sub-questions 3 and 4 will be examined through the self-administered structured questionnaire. Participation to complete the structured questionnaire will be voluntary and data collected from the questionnaire will be downloaded into the researcher's computer until all reports are been finalised. All scripts will be coded, and no names will be used in reporting the study to ensure privacy of all participants are strictly upheld. Data gathered from all participants will only be assessed by the researcher whose computer will be locked with a password. The researcher will make sure confidential information is not discussed informally with other actors.

Before the researcher begins with the data collection, consent letters will be sent to all key informants to invite their voluntarily participation in the study. Telephonic follow-up will be done to explain any questions that the key informants may have before and after sending them the questionnaire. After participants have consented to participating in the study, structured questionnaire will be emailed to them for completion. Alternatively, respondents will be given the option of receiving and filling in the questionnaire at a convenient time during the second annual Children's Nursing Educators Forum which will be held at Groote Schuur Hospital, Cape

Town, in December 2016. At this forum, the researcher will have the opportunity to explain the study to the child nurse educators and all key informants will be able to ask any relevant question in person.

The current curriculum content of children's nursing training will be assessed against the commonly occurring childhood conditions that nurses are likely to encounter at the health facilities in SA. These questions will be examined using a combination of the self-assessment responses provided by key informants and any associated documentation provided by respondents that specifies children's nursing intakes and throughputs for each training programme.

Trainee numbers will be collected via the self-administered structured questionnaire, in which participants will be asked to indicate the number of students who enrolled and graduated in their child nursing programme over the past five years.

Respondents will be asked to provide a collective profile of their graduates in terms of the proportions of men and women, their South African provincial or foreign countries of origin and an estimate of whether they were early, mid- or late career entrants into the programme.

Question 5 will be inferentially addressed based on the study findings (the documentary review on what is deemed appropriate and desirable numbers of children's nurses) and the reported numbers of nurses trained from the key informant responses. These findings will be discussed, and contextually interpreted with selected key experts on South African child nursing.

Data Analysis

Qualitative data

Qualitative data extracted from the documentary review and the self-administered questionnaire will be coded, synthesised and analysed using the format followed in qualitative thematic analyses. The qualitative data from the documentary review and questionnaires will comprise of the policy and

legislative framework of nursing education and training, as well as the curriculum foci of children's nursing training in SA.

Qualitative content analysis strategy will be used in analysing the qualitative data by developing and applying a coding system which will help identify themes and patterns that emerge from the narrative data (Sandelowski, 2000). An inductive process will be followed to identify the main themes and subthemes that pertain to the data extracted from the documents and the questionnaires. The data will be aggregated and graphically represented in tables and figures.

Quantitative data

The number of NEIs training child nurses in SA is seven. The revised scope of the proposed study is such that sophisticated statistical packages for the generation of descriptive statistics will be unnecessary.

The quantitative data from the questionnaire will include the annual numbers of child nurse trainees and graduates over a five- year period across all the NEIs identified for the study. For data extracted from the self-administered questionnaire, after all data has been collected and finalised, the researcher will develop an excel spreadsheet with the headings and sub-headings that will coincide with those in the questionnaire. Quantitative data from the questionnaires will be captured in the excel spreadsheet.

The quantitative data will be simple descriptive data and will be analysed using the descriptive statistics feature in Excel, as simple proportions will be generated.

Simple proportions will be generated for variables such as sex of trainees, and trends will be displayed across the collective institutions.

Graphs to display proportions and trends per institution and across institutions over the past 5 years will be generated from excel spreadsheet data, using excel graph functions.

As the number of respondents will be seven or fewer, all qualitative data will be collated manually from the Excel Spreadsheet and a narrative on the state

of children's nursing, using the headings that currently appear in the questionnaire will be developed in relation to the study objectives.

The final conclusions as to whether current curricula in their content meet the training needs of children's nurses will be discussed with a small group of key experts in the field of children's nursing, one of whom is a co-supervisor on this project.

Study Timeline

Activity	Timeline
Protocol submission and obtaining ethical approval at UCT	Aug – Nov 2016
Data collection and analysis	Nov – Jan 2017
Preparation of reports, manuscripts and presentation	Jan – Mar 2017
Total	8 Months

Ethics

The study will be submitted to the University of Cape Town Faculty of Health Science Ethics Committee and full ethical consideration will be established. The study is considered to be at a very low risk because data will be collected using documentary reviews and self-administered questionnaires. The respondents will have complete control over which questions they are willing to answer. Questionnaires will only be sent after consent forms have been signed and returned by the participants. Participants will remain anonymous to ensure their privacy and confidentiality are strictly maintained. There will be no personal identifier on the data or report of the findings, but an invented name will be used to ensure the confidentiality of participants are upheld.

Participants will be fully informed of the purpose of the study, risks and benefits, selection criteria and procedures of data collection, in order for them to make informed decision on whether or not to participate in the study. Participants will also be told that participation in the study is voluntary and they can choose to withdraw at the beginning or during the study at any time without any form of penalty. In addition, all participants will be given contact details of the principal investigator, as well as that of the researcher in the case of emergency or any research-related questions participants may need to ask.

Risks and Benefits of the Study

There are no foreseeable risks and potential harm of the study to participants, as this study will employ only documentary review and administering of structured questionnaires. The study will enable participants to be more aware of the importance of children's nursing training and how the improvement of the training can also improve the health outcomes of infants and children in SA. The study can also benefit the society by informing policy makers on the need to build up the human resource capacity and training needs of skilled child health nurses who can help address the high infant and child mortality rates in SA. Every effort will be made to anonymise respondents and their institutions in the thesis and in any subsequent publications, so that individuals or their institutions are not compromised in any wilful manner.

Inclusion and Exclusion Criteria for Participants

The nursing institutions that will be eligible for inclusion into the study would be accredited by the SANC to carry out children's nursing training, while the nursing training institutions that are not accredited by the SANC or if accredited, but do not train nurses in paediatrics and child health will be excluded from the study. In addition, the key informants for inclusion into the study will be convenors or nursing educators in the paediatric and child

health department while non-educators or teaching staff without specialization in child health nursing will be excluded from the study.

Privacy and Confidentiality

There will be no personal identifier on the data or publication of the findings of the results, but an invented or anonymous name will be used to ensure that participants privacy is maintained. All data collected will be locked in a safe computer with a password that is accessible to only the research team. Any hard copy document related to the research will also be accessible only by the research team and locked in a secured cabinet.

Reimbursement for Participation

There will be no monetary reimbursement to participants as this study has no foreseeable risks and research-related costs, since the study solely relies on documentary review and self-administered questionnaire for data collection. However, participants will be well appreciated for the time they spent to participate in the study.

Study Limitation

The study may be limited by delayed feedbacks from key informants (that is by either having incomplete questionnaire or by having fewer numbers of completed questionnaire). To address this, the researcher will effectively follow-up on all participants through phone calls, e-mails and text messages.

Dissemination and Reporting of Study Results

The study findings will be written as an article which is part of the MPH dissertation requirement. The article will be written for publication in a peer reviewed journal that focuses on health systems. The study findings will also be presented at relevant conferences and workshops. Feedbacks will be given to participants upon request.

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APPENDICES

APPENDIX 1: INFORMATION SHEET FOR PARTICIPANTS

Research Title: The Current Situation of Children's Nursing Training in South Africa

This research study will be reviewing the training output and curriculum content of children's nurses in South Africa, with an emphasis of identifying the nursing institutions training nurses in paediatrics and child health, including the numbers trained annually for the past five years and what they actually learn to certify them as child nurses in South Africa.

Background

Dear Colleague, my name is Uchenna Nneka Chukwu, and I am a Postgraduate student studying Masters of Public Health (MPH) at the University of Cape Town.

Please, I would like to invite you to participate in my research project entitled: **The Current Situation of Children's Nursing Training in South Africa.**

This research project is part of my MPH dissertation requirement at the University of Cape Town. The study seeks to identify how child nurses are being trained, in terms of the numbers trained in the past five years and the curriculum contents of children's nursing training at all nursing institutions that conducts children's nursing in South Africa. Children's nursing training refers to any accredited course that aims to train nurses in paediatrics and child health. Child nurses are relevant in the South African health systems because they provide health care services to infants and children, which can help address the high rate of under-five morbidity and mortality in the country.

All nursing institutions that train child nurses in South Africa will be identified for inclusion into the study and that would be the research point for the data collection. I am particularly interested in understanding the numbers of child nurses that enrolled and graduated annually from each

nursing institution and what they are learning (in terms of the modules, course outline/subjects) to certify them as a registered Child Nurse Specialist.

I intend to communicate with the managers and/or child nurse educators of each nursing institution across all provinces in South Africa where child nurses are being trained. As part of this work, I would appreciate it, if you could fill in a questionnaire about your work and understanding of children's nursing training and the structure of the curriculum content in your institution. As part of the questionnaire survey, we would welcome hearing your ideas on how improvement and strengthening of children's nursing training will ultimately contribute to alleviating child mortality and morbidity in South Africa. I am inviting you to participate in this research, and hope that you will agree to participate in the study, thereby contributing to the efforts to strengthen children's nursing training in South Africa.

Approval for the Study

Permission to carry out this project was sought from the University of Cape Town Human Research Ethics Committee: +27 21 406 6338.

Contact details

This research has been approved by the University of the Cape Town, Human Research Ethics Committee. If you have any questions about your rights as a study participant, or questions or concerns about any aspect of the study, you may contact the Ethics Committee's office on +27 21 4066338. We will also be happy to answer any question you have about this study. If you have any questions, please contact the project supervisor: Dr Maylene Shung King, Department of Public Health and Family Medicine, University of Cape Town. E-mail: maylene.shungking@uct.ac.za. Telephone: (021) 406 6580.

Participant Name: -----

Participant Signature: -----

Date: -----

APPENDIX 2: INFORMED CONSENT FORM

Research Title:

The Current Situation of Children's Nursing Training in South Africa

Hello, my name is Uchenna Nneka Chukwu, and I am a postgraduate student studying Masters of Public Health (MPH) at the University of Cape-Town.

Please, I would like to invite you to participate in my research study titled:

The Current Situation of Children's Nursing Training in South Africa.

This research study is part of my MPH dissertation requirement at the University of Cape-Town, and it is necessary that I complete this study in order to impact knowledge on the research participants and the society at large, and off course to enable me complete my MPH programme successfully.

Background

Children are the most vulnerable group of population and they are mostly faced with ill conditions that affects their health and development. The high rate of infant and child mortality in South Africa can easily be prevented if the children have access to quality health services delivered by child health professionals such as the child nurses. Sometimes, these child nurses may be unskilled to deliver competent services to sick children who present at the health facility and in order to address this gap, it is crucial to review the training situation of children's nursing in South Africa, so as to know what they are learning and if sufficient numbers are being trained to provide effective child health services in the country. This research is likely to provide useful knowledge on the need to strengthen the training of children's nursing professionals which can ultimately help address the high rate of infant and child mortality in South Africa.

Purpose of the Study

The purpose of this study is to investigate the current situation of children's nursing training, and more specifically to describe the numbers of child nurses trained annually and in the past five years, as well as the curriculum content of children's nursing training from all nursing institutions that conduct child health nursing in South Africa.

Study Procedures

This study, which is a situational analysis of children's nursing training in SA employs mixed methods to address the research questions. The study combines primary data collection with an analysis of key secondary data sources. Primary data will be done using a structured self-administered questionnaire where key informants who are the nursing educators with expertise knowledge in children's nursing will address a combination of quantitative and qualitative questions. The secondary component of the study is a documentary review, where a thematic analysis will be employed for analysing the documentary content. Documents for the review will include appropriate policy and strategy documents that identifies the legislative and policy framework of nursing education and training in South Africa. The workshop minutes of a sentinel Nurse Educator Forum that took place at Groote Schuur hospital in December of 2016 will be included as an important secondary data source.

Question 1

The policy and legislative framework for children's nursing training in SA will be examined through the documentary review, by sourcing relevant policies and laws that outline the specifications for nursing training and then extract that which relates specifically to children's nursing training in SA.

A data extraction sheet will be used and applied to each document and the data will be entered into an excel spreadsheet. Data will be grouped and

synthesised according to the questions as outlined in the data extraction sheet.

Question 2

This question will be addressed by identifying accredited NEIs through available sources such as the SANC website, as well as from key experts who have knowledge of the existence of children's nursing training courses.

Questions 3 and 4

These questions will be addressed through a questionnaire survey of nursing educators at the seven NEI's accredited by SANC to offer programmes leading to registration as a specialist in children's nursing or children critical care nursing. After establishing the key informants at the relevant NEIs using the FUNDISA directory, the study proposal and ethical approval form will be sent to all the key informants of the NEIs via e-mail. This will be followed by data collection to show a real life representation of current training and curriculum content of children's nurses in SA.

One key informant will be identified from each of the seven training institutions and sub-questions 3 and 4 will be examined through the self-administered structured questionnaire. Participation to complete the structured questionnaire will be voluntary and data collected from the questionnaire will be downloaded into the researcher's computer until all reports are been finalised. All scripts will be coded, and no names will be used in reporting the study to ensure privacy of all participants are strictly upheld. Data gathered from all participants will only be assessed by the researcher whose computer will be locked with a password. The researcher will make sure confidential information is not discussed informally with other actors.

Before the researcher begins with the data collection, consent letters will be sent to all key informants to invite their voluntarily participation in the study. Telephonic follow-up will be done to explain any questions that the key informants may have before sending them the questionnaire for self-administered filling in. After participants have consented to participating in the study, structured questionnaires will be emailed to them for completion.

Alternatively, respondents will be given the option of receiving and filling in the questionnaire at a convenient time during the second annual Children's Nursing Educators Forum which will be held at Groote Schuur Hospital, Cape Town, in December 2016. At this forum, the researcher will have the opportunity to explain the study to the children's nursing educators and where key informants will be able to ask any relevant question in person.

The current curricula content will be assessed against the commonly occurring childhood conditions that nurses are likely to encounter at the health facilities in SA. These questions will be examined using a combination of the self-assessment responses provided by key informants and any associated documentation provided by respondents that specifies children's nursing intakes and throughputs for each training programme.

Trainee numbers will be collected via the self-administered structured questionnaire, in which participants are asked to indicate the number of students enrolled, and graduated in their programme over the past five years.

Key informants will be asked to provide a collective profile of their graduates in terms of the proportions of men and women, their South African provincial or foreign countries of origin and an estimate of whether they were early, mid- or late career entrants into the programme.

Question 5 will be inferentially addressed based on the study findings (the documentary review on what is deemed appropriate and desirable numbers of children's nurses) and the reported numbers of nurses trained from the key informant responses. These findings will be discussed, and contextually interpreted with selected key experts on South African children's nursing.

Inclusion and Exclusion Criteria for Participants

The nursing institutions that are accredited by the SANC to train registered nurses in child health and paediatric nursing (because not all accredited nursing schools carry out programmes on paediatrics and child health nursing) will be included for the study, while institutions without

accreditation to carry out nursing programmes more especially child health, nursing (some nursing schools are not accredited by the SANC to carry out nursing programmes, including child health nursing) will be excluded from the study.

More so, the key informants who are convenors or teaching staff of the children's nursing training at the selected nursing institutions will be identified for data collection, while non-teaching staff or those without specialization in child health nursing will be excluded from the study.

Privacy and Confidentiality

If you agree to take part in this study you will be invited to complete a self-administered questionnaire, which I will email to you. Please note that in order to preserve confidentiality, your name or that of your institution will not be identified in the final report on this research, as well as in the thesis or any subsequent written products. Any hard-copy documents relating to the research (e.g. printed out interview notes) will also only be accessible to the research team and kept in a secured cabinet.

Your participation is completely voluntary and you are not obliged to participate. A consent form will be given to you to ask whether you consent to partake in the research. If you consent, we would greatly appreciate if you answer all the questions in self-administered questionnaire which will be emailed to you. You may refuse to answer any question in the questionnaire and there will be no follow up on this matter. All reports will be kept in safe cabinet which be locked by the researcher. I will not use your name or any personal identifier in the research report, instead I will use an invented name so that no one can identify you or your institution. Any hard-copy documents and reports relating to the research will only be accessible to the research team and kept in a secure cabinet which will be destroyed after the publication of findings.

Risks and Benefits of the Study

There are no foreseeable risks and potential harm of the study to participants, as this study involves documentary review and self-administered questionnaire. The study will enable participants to be more aware and enlightened on the need to review and strengthen children's nursing training and how the improvement of children's nursing training can improve the health of infants and children in South Africa. The study can also benefit the society by informing policy makers on the need to build up human resources capacity and training needs of skilled child nurses who can improve child health in South Africa.

Reimbursement

There will be no monetary reimbursement to participants as this study has no foreseeable risks and research-related costs, since the study solely involves documentary reviews and self-administered questionnaire. Although participants will be adequately appreciated for their time and effort in participating in the study.

Approval of the Study

Permission to carry out this research dissertation was sought from the University of Cape-Town Human Research Ethics Committee: +27214066338.

Contact Details

This research has been approved by the University of Cape-Town Human Research Ethics Committee. If you have any questions regarding your rights as a study participant, or questions about any aspect of the study, you may wish to contact the Ethics Committee's office on +27214066338. We will also be happy to answer any question you have about this study. If you have any questions, please contact the project supervisor: Dr Maylene Shungking,

department of Public Health and Family Medicine, University of Cape-Town.

E-mail: Maylene.shungking@uct.ac.za. Tel: (021) 4066580.

If you consent to partake in the study, please kindly sign here:

Participant Name: -----

Participant Signature: -----

Date: -----

Witness Name: -----

Witness Signature: -----

Date: -----

APPENDIX 3: DATA EXATRCTION FORM FOR THE DOCUMENTARY REVIEW

Data extraction sheet for the documentary review (will be converted to excel spreadsheets)							
General overview of the policy, legislative and training frameworks for paediatric nurse training in South African							
1 Docume nt no:	2 Name of Document	3 Date published	4 Source of document (where document was obtained)	5 Nature of document (e.g. policy, law curriculum outline, training guidelines etc.)	6 Purpose of document (why document was produced)	7 Specific relevance to nurse training (specify what this document contributes to the understanding of nurse training in general)	8 Specific relevance to paediatric nurse training (specify what this document contributes to the understanding of paediatric/child health training more specifically
1							
2							
3							
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6							

APPENDIX 4: SELF-ADMINSTERED QUESTIONNAIRE FOR THE STUDY ON CHILDREN'S NURSING TRAINING IN SOUTH AFRICA

Thank you very much for agreeing to participate in this study. The following set of questions will help us greatly in developing a profile of Children's Nursing Training (by this we mean the accredited training courses that address Pediatrics/ child health, or both and includes degrees and diplomas in Pediatrics and/or Child health nursing. For ease of use, we refer to these courses as Children's Nursing Training courses from hereon.

We would appreciate it greatly if you are able to fill in all, or as many of the questions as possible. If any question is not relevant to you, or if the information is not available, or you prefer not to fill it in, then please leave it blank. We are providing an open slot at the end of the questionnaire for you make any comments/suggests for the research team.

1. What is the current title of the Children's Nursing training programme in your institution? For example, Post Grad Diploma in Child health / or Paediatrics
2. Please describe your role in this Nursing Education Institution; do you play an active role in managing this Institution (e.g. staffing, admissions, managing finances, coordinating or reporting, facilitating training or lecturing)?
3. What is your specific role in the children's nursing training programme? E.g. convenor, lecturer etc.
4. Which year did this programme start in your institution?

5. What is the duration of training programme at your institution? Circle the relevant answer:	
Less than a year	1 year 1-2 years More than 2 years
6. What are the entry requirements for the training programme in your institution?	
Go to the curriculum-specific questions	
7. Where do the nurses on your programme come from? South Africa mostly or from other countries too?	
8. If from other countries, which countries have you received students from in the past 5 years? For the South African students, which provinces do they come from?	
9. Which province sends the majority of nurses to do your programme?	
10. What is the maximum number of paediatric nurses that can be admitted into your institution annually?	
11. How many nurses have you admitted to the programme over the past five years?	
(Please fill in TABLE 1 in order to give us an annual breakdown of the students	
12. How many of these paediatric nurse students have successfully graduated in the past five years from your institution (break down annually in TABLE 1) ?	
13. Are you able and willing to please provide a profile of the student who enrol and graduate from your institution in terms of gender and nursing experience? Please circle the relevant answer	
<div style="text-align: center;"> Yes No </div>	
If Yes, please go to TABLE 1 and fill in as many of the blocks as possible	
14. Are you willing to share your current curriculum profile with us? Please circle the relevant answer	
<div style="text-align: center;"> Yes No </div>	

If Yes, then please go to TABLE 2 at the end and fill in as many of the questions as possible

15. Has your programme been formally evaluated in the past 5 years? Please circle the relevant answer

Yes No

If yes, will you be willing to share the report with us? Please circle the relevant answer

Yes No

If yes, kindly attach the evaluation report when you return the questionnaire to us.

16 Are there any other issues that you would like to raise regarding your programme or about paediatric nurse training in South Africa in general?

TABLE 1: PROFILE OF STUDENTS ON YOUR PROGRAMME OVER THE PAST 5 YEARS

(Please be assured that this is intended to give a profile of the actual numbers as a collective across the country and will not be reported on, or reflected for, any specific institution).

	2012	2013	2014	2015	2016
No of students enrolled					
No of students from this cohort who graduated					
Number of males					
Number of females					

Number of students from outside of South Africa					
<p>For the students from South Africa, from which provinces do they <i>predominantly</i> come from?</p> <p>Share any comments that you may have about this aspect here.</p>					
<p>For students from outside South Africa, which countries do they <i>mainly</i> come from?</p> <p>Share any comments that you may have about this aspect here.</p>					
<p>Please give an indication as to when the <i>majority of students</i> entered the programme. Circle the relevant answer</p> <p>Early in their nursing career of their career Mid-career Towards the end</p> <p>Share any comments that you may have about this aspect here.</p>					
<p>Do you have an idea of where the students who do your course predominantly end up working? Please circle the relevant answer.</p> <p>Public sector clinics / community health centres Public sector hospitals</p>					

Private sector hospitals

Other?

Share any comments that you may have about this aspect here.

SECTION 2: Curriculum overview questions. Kindly answer as comprehensively as possible.																
Please be assured that an overall picture of children's nursing curricula will be described in the study and institution-specific curricula will not be identified in any way																
For the following topics, please indicate to what extent the topic a) forms part of the current children's nursing programmes at your institution and if so: b) whether this is through classroom based instruction and/or c) via clinical practice in a relevant environment, and d) whether students are required to demonstrate competence in this area as part of formally assessed course requirements.		a						b			c			d		
		1 = not covered at all 6 = covered to a very full extent						Via classroom instruction			Via clinical placement in a relevant environment			Are students required to demonstrate competence in this area as part of formally assessed course requirements?		
1		1	2	3	4	5	6	Yes	No	Don't know	Yes	No	Don't know	Yes	No	Don't know
1	Neonatal care															

2	Exposure to modern modalities of care (e.g. CPAP)	1	2	3	4	5	6	Yes	No	Don't know	Yes	No	Don't know	Yes	No	Don't know
3	Helping Babies Breathe learning package	1	2	3	4	5	6	Yes	No	Don't know	Yes	No	Don't know	Yes	No	Don't know
4	IMCI learning package delivered by accredited trainer	1	2	3	4	5	6	Yes	No	Don't know	Yes	No	Don't know	Yes	No	Don't know
5	Basic care of common childhood illnesses	1	2	3	4	5	6	Yes	No	Don't know	Yes	No	Don't know	Yes	No	Don't know
6	Initiation and support of breastfeeding in new-borns	1	2	3	4	5	6	Yes	No	Don't know	Yes	No	Don't know	Yes	No	Don't know
7	Resuscitation of new-borns and care for small/ill new-borns according to standardized protocols	1	2	3	4	5	6	Yes	No	Don't know	Yes	No	Don't know	Yes	No	Don't know
8	Kangaroo Mother Care	1	2	3	4	5	6	Yes	No	Don't know	Yes	No	Don't know	Yes	No	Don't know
9	Trauma, resuscitation and emergency care	1	2	3	4	5	6	Yes	No	Don't know	Yes	No	Don't know	Yes	No	Don't know
10	Infant and child feeding and nutrition	1	2	3	4	5	6	Yes	No	Don't know	Yes	No	Don't know	Yes	No	Don't know
11	Growth monitoring and promotion	1	2	3	4	5	6	Yes	No	Don't know	Yes	No	Don't know	Yes	No	Don't know

12	Recognition and detection of malnutrition	1	2	3	4	5	6	Yes	No	Don't know	Yes	No	Don't know	Yes	No	Don't know
13	Promotion of breastfeeding and appropriate complementary feeding practices for infants and young children	1	2	3	4	5	6	Yes	No	Don't know	Yes	No	Don't know	Yes	No	Don't know
14	Feeding programmes (including criteria and processes for referral)	1	2	3	4	5	6	Yes	No	Don't know	Yes	No	Don't know	Yes	No	Don't know
15	Management of ill children in hospitals	1	2	3	4	5	6	Yes	No	Don't know	Yes	No	Don't know	Yes	No	Don't know
16	Long term health conditions in children	1	2	3	4	5	6	Yes	No	Don't know	Yes	No	Don't know	Yes	No	Don't know
17	Training in clinical governance and quality improvement techniques	1	2	3	4	5	6	Yes	No	Don't know	Yes	No	Don't know	Yes	No	Don't know
18	Leadership development	1	2	3	4	5	6	Yes	No	Don't know	Yes	No	Don't know	Yes	No	Don't know
19	If the curriculum includes other topics which you consider to be important, please state:															
20	I am attaching an outline of the curriculum	Yes No														
<p>Thank you very much for completing this questionnaire, we greatly appreciate it.</p>																

Please feel free to make any additional comments/ suggestions about/for Children's Nursing Training in general, or about this study or the questionnaire specifically.

Approval for the Study

Permission to carry out this project was sought from the University of Cape Town Human Research Ethics Committee: +27 21 406 6338.

Contact details

This research has been approved by the University of the Cape town, Human Research Ethics Committee. If you have any questions about your rights as a study participant, or questions or concerns about any aspect of the study, you may contact the Committee's office on +27 21 4066338. We will also be happy to answer any question you have about this study. If you have any questions, please contact the project supervisor: Dr Maylene Shungking, Department of

Public Health and Family Medicine, University of Cape Town. E-mail: maylene.shungking@uct.ac.za. Telephone: (021) 406 6580.

APPENDIX 5



UNIVERSITY OF CAPE TOWN

Faculty of Health Sciences

Human Research Ethics Committee



Room E53-46 Old Main Building

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Observatory 7925

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Email: sumayah.arlefdlen@uct.ac.za

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14 November 2016

HREC REF: 717/2016

Dr M ShungKing

Health Policy Systems

Public Health & Family Medicine

Falmouth Building-FHS

Dear Dr ShungKing

PROJECT TITLE: WHAT IS THE CURRENT SITUATION OF PAEDIATRIC NURSE TRAINING IN SOUTH AFRICA? (MASTERS CANDIDATE MR U CHUKWU)

Thank you your response letter dated 05 November 2016, addressing the issues raised by the Human Research Ethics Committee (HREC).

It is a pleasure to Inform you that the HREC has formally approved the above-mentioned study.

Approval Is granted for one year until the 30 November 2017.

Please submit a progress form, using the standardised Annual Report Form if the study continues beyond the approval period. Please submit a Standard Closure Form If the study is completed within the approval period. Forms can be found on our website:

www.health.uct.ac.za/fhs/research/humanethics/forms

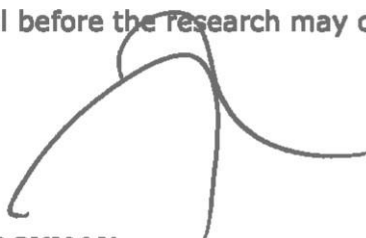
We acknowledge that the student, U Chukwu will also be Involved in this study.

Please quote the HREC REF in all your correspondence. Please note that the ongoing ethical conduct of the study remains the responsibility of the principal Investigator.

Please note that for all studies approved by the HREC, the principal investigator must obtain appropriate

institutional approval before the research may occur.

Yours sincerely



PROFESSOR M BLOCKMAN
CHAIRPERSON, FHS HUMAN RESEARCH ETHICS COMMITTEE

Federal Wide Assurance Number: FWA00001637.

Institutional Review Board (IRS) number: IRB00001938

HREC REF: 717/2016

This serves to confirm that the University of Cape Town Human Research Ethics Committee compiles to the Ethics Standards for Clinical Research with a new drug in patience, based on the Medical Research Council (MRC-SA), Food and Drug Administration (FDA-USA), International Convention on Harmonisation Good Clinical Practice (ICH GCP), South African Good Clinical Practice Guidelines (DOH 2006), based on the Association of the British Pharmaceutical Industry Guidelines (ABPI), and Declaration of Helsinki (2013) guidelines.

The Human Research Committee granting this approval is in compliance with the ICH

Harmonised Tripartite Guidelines E6: Note for Guidance on Good Clinical Practice (CPMP/ICH/135/95) and FDA Code Federal Regulation Part 50, 56 and 312.

Part B: Literature Review

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Introduction

One of the top objectives of the Sustainable Development Goals (SDGs) is to reduce the high rates of infant and child mortality worldwide, but most especially in developing countries where the highest rates of infant and child deaths frequently occurs (WHO, 2015). For example, the target of the SDGs is to reduce under-5 mortality rate (U5MR) to 25 deaths per 1, 000 live births and neonatal mortality rate (NMR) to 12 deaths per 1, 000 live births by the year 2030 (UN, 2015). However, most countries except Sub-Saharan Africa (SSA) have experienced reductions in U5MR in response to the Millennium Development Goals (MDGs), from 89 deaths per 1,000 live births in 1990 to 60 deaths per 1,000 live births in 2009 (UNICEF, 2010). The highest U5MR continues to occur in SSA, where one child in eight dies before reaching their fifth birthday, which is about 129 deaths per 1,000 live births and this is almost 20 times the average in developed countries (UNICEF, 2010).

There have been huge improvements in child survival worldwide, although these achievements are not equitably distributed both across and within countries, most especially in low and middle income countries where most children are still deprived of accessing quality health care services (UNICEF, 2010; UNICEF, 2012).

Child health started to improve in South Africa (SA) due to the implementation of major health programmes such as the roll-out of anti-retroviral treatment (ART) leading to fewer Human Immunodeficiency Virus (HIV), prevention of mother to child transmission of HIV (PMTCT), as well as roll-out of rotavirus and pneumococcal vaccines which greatly helped in reducing infant and child deaths due to pneumonia and diarrhoea in SA (South Africa Department of Health, 2014). However, despite efforts made in reducing the high U5MR in SA, access to child health and paediatric services still remain inequitably distributed and child health is still in a poor state, especially when compared to other developing countries (Coovadia et al., 2009; Coetzee, 2014).

Several literatures recommend that the high proportion of infant and child deaths are preventable with the intervention of qualified Child Nursing Professionals (Stephen et al., 2011; South Africa Department of Health, 2011;

McKerrow, 2014; Coetzee, 2014). Most under-five deaths are avoidable, especially facility-based death causes for children who die in the health facilities, such as those who die in the hospitals where child nurses are required to play major roles in addressing childhood morbidities and mortalities (South Africa Department of Health, 2011). Therefore, training adequate numbers of competent and skilled child nurses can help address the complex issues relating to child health in SA.

This literature review explores what we need to know about children's nursing training, in terms of what they are trained on and how they can help improve child health status, which then helps us to see where the gaps and challenges lie and how this study will make a contribution in the current understanding of, and knowledge about children's nursing training in SA.

Methods

The articles used for this literature review were retrieved using Google Scholar and Pub-Med electronic databases. The keywords that were used for the search include: 'child health', 'child health status', 'child mortality', 'under-five mortality rate', 'infant and child mortality', 'paediatric nurses', 'child nurses', 'human resources for health', 'nurse clinical practice', 'clinical evaluation', 'South Africa health system', 'paediatric nurse training', 'paediatric nurse training courses', 'what does paediatric nurses do', 'who are paediatric nurses', 'nurse training institutions', 'human resources for health in Africa', 'nursing training in Africa' and 'nurse training and education'.

Further articles were obtained because they were referenced in the literature or were recommended by colleagues and research collaborators at the Red Cross War Memorial Children's Hospital Cape Town.

The study utilized articles published in English from 1988 (since nursing is a long established profession) to 2016. The older articles were used to describe the establishment of the nursing profession, as well as their education and training in SA and other countries, while the recent articles were used to describe the childhood death causes in SA and other countries, as well as the

relevance of the nursing workforce in addressing child health needs in SA. A total of 120 articles were reviewed and the 74 referenced in this literature review were found to be directly relevant to the study.

Results

Child Mortality Trends

Since 1990, the highest rate of infant and child deaths has been occurring frequently in the poorest and most undeserved regions, especially in SSA where the poorest child dies before attaining age five (UNICEF, 2010; UNICEF 2012). According to the United Nations Children's Fund (UNICEF), approximately 70% of the world's under-five deaths in 2009 occurred in fifteen low-and-middle income countries (UNICEF, 2010). This suggests that most children in developing countries are still faced with limited access to quality health care and paediatric services needed for children to access the right health care and attain their full potential and development.

Child deaths in SA is still high above the targets of the SDGs, especially when compared to some other developing countries. For example; Peru (25 deaths per 100, 000 live births), Egypt (35 deaths per 100, 000 live births) and Morocco (37 deaths per 100,000 live birth) have lower child deaths compared to SA (69 deaths per 100,000 live births) (Coovadia et al., 2009; Sanders et al., 2009). This is despite the fact that these countries have comparable and mainly lower income status than SA (Coovadia et al., 2009; Sanders et al., 2009). The distribution and pattern of child morbidity and mortality in SA are shaped by insistent inequalities across various provinces and population groups, and these inequalities are severed by the growing inequalities in employment and income status in SA (Sanders et al., 2009; SAHRC and UNICEF, 2016).

In SA, the NMR, infant mortality rate (IMR) and U5MR were 11.2, 28.4 and 38.5 deaths per 1, 000 live births in 2011 (South Africa Department of Health, 2014). It is seen that these rates are above the two-thirds reduction first

articulated by the Millennium Development Goals (MDGs) to reduce infant and child mortality between 1990 and 2015 (WHO, 2015).

Subsequently across provinces, the highest U5MR in 2011 was reported in Free State (FS), which reported a rate of 71.2 deaths per 1, 000 live births and this was almost three times higher than the rate of 24.1 deaths per 1, 000 live births as reported in the Western Cape (WC) (South Africa Department of Health, 2014). This reveals provincial inequality in child health status between the FS and the WC. In the same way in 2011, the U5MR in the Northern Cape (NC) was 51.0 deaths per 1, 000 live births, North West (NW) was 49.7 deaths per 1, 000 live births and Gauteng Province (GP) was 42.9 deaths per 1, 000 live births, which were all above the national average (South Africa Department of Health, 2014). Lastly, in the Eastern Cape (EC), the U5MR was 30.8 deaths per 1, 000 live births, Limpopo (LP) was 33.5 deaths per 1, 000 live births, Kwazulu-Natal (KZN) was 35.0 deaths per 1, 000 live births and Mpumalanga (MP) was 35.5 deaths per 1, 000 live births, which all reported below the national average (South Africa Department of Health, 2014). From these national figures, it is seen that they exist huge variations in the U5MR across various provinces in SA, which is as a result of inequality in the access and use of health care services, including inequality in employment and income status among various population groups in SA (SAHRC & UNICEF, 2016).

Most infants and children, especially those in underserved and rural areas still die from common childhood illnesses which can easily be prevented, if these children have access to competent health care providers, such as the Child Nursing Professionals who are trained to render effective services to sick children in the health facilities (South Africa Department of Health, 2011; Stephen et al., 2011; Coetzee, 2014; McKerrow, 2014). Therefore, there is dire need for SA to scale up measures needed to address the high deaths of children in the country, and one of such measures is by strengthening the training needs of Child Nursing.

Causes of Childhood Morbidity and Mortality

The major causes of U5MR among children in SSA are pneumonia, diarrhoea, malaria, Human Immunodeficiency Virus (HIV), Acquired Immune Deficiency Syndrome (AIDS) and malnutrition (UNICEF, 2010). Pneumonia and diarrhoea remains the leading cause of infants and child mortality worldwide, and about 90% of child deaths due to pneumonia and diarrhoea occur in SSA (UNICEF, 2012).

In SA more specifically, the leading causes of infant and child deaths include; preterm birth complications, birth asphyxia, tuberculosis, prematurity, sepsis, HIV/AIDS, gastroenteritis, pneumonia, diarrhoea, acute respiratory illnesses and malnutrition (Sanders et al., 2009; South Africa Department of Health, 2011; South Africa Department of Health, 2014; McKerrow, 2014; Statistics South Africa, 2014). The proportion of HIV infected children in SA reduced from almost half in 2010 to approximately one third in 2013. This shows huge success in the implementation of major health programmes in SA, which include the Prevention of Mother to Child Transmission of HIV (PMTCT) and anti-retroviral treatment (ART). In addition, 30% of children who died in SA between 2010 and 2013 were severely malnourished.

Sanders et al. recommended that the intervention to reduce the high levels of childhood morbidity and mortality in SA must prioritise interventions to curb major childhood diseases such as HIV, childhood infections, neonatal causes and undernutrition and should include treatment and preventive actions, as well as social and environmental measures necessary to address childhood illnesses in SA (Sanders et al., 2009).

According to the South Africa Department of Health, about 70% of preventable factors leading to child deaths in SA occur at the health facilities and this factors are linked directly to the health care providers (South Africa Department of Health, 2011). This therefore suggests the need to prioritize the training needs of the health professionals, most specifically those trained as a Child Nurse Specialist (CNS) to deliver effective health care services to infants and children who present at the health facility.

Coetzee 2014 argues that though the causes of child deaths are mostly preventable, achieving great reductions of infant and child mortalities in SA will require a complex and multipronged approach in a re-engineered health care system (Coetzee, 2014). Several strategies for addressing the complex issues leading to infant and child deaths in SA were identified, and one of such strategy is to strengthen the education and training of children's nursing (South Africa Department of Health, 2011; Coetzee 2014; McKerrow, 2014). The CoMMiC in its first triennial report recommends that it is necessary to improve training in paediatrics and child health and such training should be in line with the priority health needs of children in the health systems (South Africa Department of Health, 2011; McKerrow, 2014). The CoMMiC also suggests strengthening the curriculum content and training platform for nurses trained in paediatrics and child health, so as to develop and deploy a cadre of skilled Child Nurse Professionals who are competent to address the high U5MR in SA (McKerrow, 2014; Coetzee, 2014).

A study done by Gosangaye and Mayeye 2013 to assess the 'Knowledge and Skills of Professional Nurses Regarding IMCI Service Delivery at Primary Health Settings in Eastern Cape, South Africa', identified in the findings that the knowledge and skills of the professional nurses regarding IMCI was inadequate and recommends that the quality of service delivery for IMCI can be improved through further training of all nursing professionals which will serve to improve their knowledge and skills in the management of childhood conditions in SA. This suggests the importance of integrating theory and practice as critical aspects for improving the health care system, because they help develop health care providers with the right knowledge and skills relevant to address the health care needs of the population.

More so, the study carried out by Craddock 1993 on 'Developing the Facilitator Role in Clinical Area', reports that it is very important for nursing to be practice based and this refers to the importance of the clinical area in nursing training and learning (Craddock, 1993). According to Lee 1996, though the clinical area is considered to be the centre of nursing training, students often experience some difficulties during their clinical placements

(Lee, 1996). Therefore, in order to provide competent nurses who are work place ready, there is urgent need to provide ways necessary for addressing the theory-practice gaps most nursing professionals are faced with during their nursing training (Lambert and Glacken, 2004).

Human Resources for Health

According to the World Health Organisation (WHO), the health workforce makes up one of the six building blocks of the health system framework that countries need to strengthen, if the objective of universal equitable access to good quality health care services is to be achieved (WHO, 2007). Without the health workforce, health systems cannot function effectively (Spero et al., 2011). This means that the health systems depend on the health workforce in order to deliver effective, efficient and high quality health care services to the populations in need (WHO, 2009; Spero et al., 2011). Within the health system are sub-systems such as service delivery, health workforce, information, medical products, vaccines and technologies, as well as financing and governance (WHO, 2009).

People are the centre of the health system and they are seen as actors in driving the system, which includes their participation as individuals, health practitioners, managers, and policy makers (WHO, 2009). Training is crucial in strengthening the health workforce capacity (WHO, 2013; Coetzee et al., 2016). Therefore, it is important that in promoting the strategies for strengthening the health systems, the training needs of the health professionals should be taken more seriously and this is because their education and training determines what competencies they will acquire and deliver to the health care users (WHO, 2013).

Health care-related occupations include; physicians, nurses, midwives, dentists and pharmacists, as well as medical assistants, dental assistants, physiotherapists, opticians, sanitarians and traditional medicine practitioners (Diallo et al., 2003; Liese and Dussault, 2004). Among these

health professionals, nurses are considered to make up the largest group of health care providers (Reynolds et al., 2013).

Effectively planning the health workforce is important in order to ensure that the recruitment, education, training, and deployment of health care practitioners are conducted in the most efficient way possible (Spero et al., 2011; WHO, 2013). In many developing countries, the human resource capacity has not yet measured up to the populations and increasing burden of diseases (Gillespie et al., 2006; Swinger et al., 2012; Reynold et al., 2013). The World Health Report 2016 on 'Working Together for Health', identified that 57 countries globally have a critical health workforce shortage, which is equal to a global deficit of 2.4 million doctors, nurses and midwives and by implication suggests millions of people worldwide do not receive the essential health care services that are desperately needed (WHO, 2006). They also exist health workforce imbalances in terms of inequitable distribution of health workers in all countries (Frenk et al., 2010; Celleti et al., 2011). Frenk at al. argues that 'the imbalances of the health workforce create an urgent need to increase the numbers of human resources for health, align the education and training of health providers to the new epidemiological and demographic challenges, ensure a proper mix, and adapt measures and incentives to make the geographical and organisational distribution of health professionals more equitable' (Frenk et al., 2010).

Health personnel to population ratios are a starting point in recognising the extent of health workforce crisis in any given society and the figures for Africa is extremely low, especially when compared to developed regions (Liese and Dussault, 2004). For example, the average ratio of physicians per 100,000 people in SSA was 15.5 compared to an average of 311.0 in developed countries, while the average ratio of nurses per 100, 000 people was 73.4 in SSA and 737.5 in developed countries (Liese and Dussault, 2004). These figures suggest that on average, African countries had about 20 times fewer physicians and 10 times fewer nurses than developed countries (Liese and Dussault, 2004). This means that countries within the African region is in a

critical health work force crisis which needs to be urgently addressed, if the goal of Universal Health Coverage (UHC) is to be achieved.

However, simply training and graduating more health professionals is not enough solution to the health workforce crisis in the African region, although it is important that sufficient numbers are being trained, but It is critical that the right knowledge is being taught in the classrooms and practice settings, so as to provide well qualified health professionals who have acquired the competencies needed to address the health care needs of the populations (WHO, 2013). Therefore, in the process of building a stronger education and training programme for health professionals, it is important that the right curricula are developed and constantly reviewed, as well as employing the right profile of educators and learning strategies that are more suitable to produce skilled health workforce needed to provide quality health care services (WHO, 2013).

Nursing Supply

Nurses are leading in the implementation of strengthening the health care system by fulfilling wide range of roles, especially when there is limited number of other health care workers (Reynolds et al., 2013; Smith, 2014). The nurses are also the largest group of health care providers and are leading in the realization of various health care reform initiatives (Spero et al., 2011; Smith, 2014; Blaauw et al., 2014). This shows that the nurses are important group of health care providers, and if given the right education and training, they can help improve the health outcomes of the whole populations.

However, the scarcity of skilled nurses has been identified as a barrier to achieving an effective health care system and this is recognised as a global crisis (Gillespie et al., 2006; Spero et al., 2011; Reynolds et al., 2013; Coetzee et al., 2016). In response to this crisis, the WHO has identified a minimum target for combined doctor, nurse and midwife density of 2.28 per 1000 of the population, and below this estimate, a health workforce is unlikely to meet the needs of the populations (Reynolds et al., 2013). Fifty-seven countries,

mostly in SSA, but also in Asian countries were below this WHO threshold (Reynolds et al., 2013). Between 2000 and 2010, SA nurse density was 4.08 per 1000 and Kenya had significantly lower density ratio of 1.18 nurses to 1000 populations (Reynolds et al., 2013). Although SA's overall nurse density is significantly higher compared to some other African countries, it still suffers from inequitable distribution of nurses, shortages in underserved and rural areas and limited supply of nurses to meet the public health needs of the country (Reynolds et al., 2013).

Nursing Education and Training

The primary aim of the nursing education is to provide adequate numbers of competent and caring nurses who are required to meet the health care needs of the populations (South Africa Department of Health, 2013). The education of health professionals has gained momentum globally, in light of the need to produce more health care professionals who are work-place (WHO, 2013; Rispel and Bruce, 2014). Taking into consideration the major health care reforms in SA, nursing education is critical to enable the nurses provide skilful patient care that meet the needs of the population, engage in policy debates and provide leadership for change (South Africa Department of Health, 2013). An improved nursing education system is necessary to ensure that the current and future generation of nurses are able to provide safe, quality, patient-centred care across all levels of care in SA (South Africa Department of Health, 2013).

The nursing education in the African region has undergone various phases from the precolonial, colonial and post-colonial periods, except in Ethiopia (Dolamo and Olubiyi, 2013). In the pre-colonial days, a lot was not known about nursing in SA, however, in Europe and other parts of the world, nursing profession was in the form of experimental practice arising from treating the sick and the wounded, especially in certain countries where inter and intra-tribal wars frequently occurred (Dolamo and Olubiyi, 2013).

The first nursing education in SA was established in 1877 by Henrietta Stockdale, a British nurse from an Anglican Lay Order (Marks, 1994; Klopper and Uys, 2013). At that time in SA, the first nursing education was in the form of a standard hospital apprenticeship model and was placed under the jurisdiction of the Medical Council, instead of the Department of Education (Dlamini and Mashaba, 1988; Klopper and Uys, 2013 and Blaauw et al., 2014).

Nursing in SA has gone through various transformation and the nursing education was initially controlled by each province under the South African Medical and Dental Council (Klopper and Uys, 2013). However, when all the provinces in SA were united (Union of South Africa), the South African Nursing Council (SANC) became established in 1944 according to the Nursing Act 45 of 1944, thereby awarding full responsibility of all nursing education and training to the SANC (Klopper and Uys, 2013). This was 300 years after the first licensing of midwives in SA and 53 years after nurses were first included in the professional register (Searle et al., 2009; Klopper and Uys, 2013).

The establishment of the SANC took over the control of the nursing education from the Medical Council (Marks, 1994; Blaauw et al., 2014). Then the first university nursing degree in SA began in 1956, although the uptake was very little (Ehlers, 2002; Blaauw et al., 2014). A more significant policy shift occurred in 1986 when all nursing colleges were required to become affiliated with university-based nursing departments, which placed them officially within the higher education system and at the same time, a new comprehensive 4-year curriculum (including general nursing, midwifery, community nursing and psychiatric nursing) was introduced for the training of professional nurses in SA and could be completed through a nursing college diploma or a university degree (Searle, 1983; Breier et al., 2009; Blaauw et al., 2014).

Nursing education system in SA is multifaceted with three types of nursing education institutions with associated clinical facilities, either in the public or private sectors (Klopper and Uys, 2013; Dolamo and Olubiyi, 2013). This

include nursing education offered at universities, university technologies and nursing colleges (Klopper and Uys, 2013; Dolamo and Olubiyi, 2013). The universities and university technologies provides the Bachelor's Degree or B. Tech (Klopper and Uys, 2013). Those offered at the nursing colleges include a four-year diploma with general nursing, midwifery, psychiatry, community health and other nurse specialist programmes such as the child nursing (Klopper and Uys, 2013; Dolamo and Olubiyi, 2013).

The nursing colleges in SA have affiliation to universities and the university based-undergraduate program is essentially the Bachelor's in Nursing, including Bachelor in Social Science (Nursing), Baccalaureus Curations, and Bachelor of Science in Nursing, which all end up with the same professional registration with the SANC (Klopper and Uys, 2013). The university postgraduate programs include; the clinical specializations at post-basic level, including the Honours, Master's and Doctoral degrees (Klopper and Uys, 2013). An Honours degree usually follows a 3-year Bachelor's degree and prepares the nursing student for postgraduate studies at the Master's level (Klopper and Uys, 2013).

In SA, a specialist nurse such as those qualified as a Child Nurse Specialist (CNS) is a Registered Nurse (RN) who has undergone a four year nursing education programme (Bachelor's in Nursing) and a Postgraduate Diploma qualification in Child Nursing Science. The education and training of a CNS must be conducted at a Nursing Education Institution (NEI) that has been accredited by the SANC to carry out the specialist nursing programme (SANC, 2012). The CNS practice is based on a core body of knowledge and skills that is continually expanded by continuing education and refined by research (SANC, 2012).

The transformation of the nursing qualification in SA was part of the post-apartheid transformation of the nursing programmes, which was also influenced by changes in the education sector (Blaauw et al., 2014). Blaauw et al. reports that the two most important reforms in the nursing education in SA were the requirement of the Baccalaureate Degree to qualify as a Professional Nurse (PN) and abolishing the two years Enrolled Nurse (EN)

training in favour of the 3-year college Diploma. The key recommendation of the new nursing qualifications proposal in SA is that registration as a PN will require completion of a Baccalaureate Degree in Nursing, rather than a nursing college diploma (SAQA, 2012).

According to the South African Department of Health, there is an urgent need to significantly increase the production of all categories of nurses, in order to fulfil the requirements of the health systems (South Africa Department of Health, 2006). It is therefore necessary that the nursing education and supply of nurses form an integral part of the transformation of health services in SA (South Africa Department of Health, 2006).

A study carried out by Mkhize and Nzimande 2007, identified that many students who choose nursing as a profession were motivated by the desire to help and care for others, and they have strong perceptions on how they will practice once qualified (Mkhize and Nzimande, 2007). This suggests the passion and motivation nurses have to provide care to those who are in need of them, therefore, they should be encouraged by ensuring that they have good learning environment and the right knowledge to qualify them as health care professionals.

Child Health Nursing Education and Training

Children, families and the public always expect that nurses and other health care providers who are responsible for children's health care will appropriately be qualified and experienced (Royal College of Nursing, 2003). Nurses who provide care for children have specific qualifications in the nursing care of children and such nurses are registered nurses who hold a certificate or Diploma in Child Nursing Science (SANC, 2012).

Child nurses are important group of health care providers because they are primarily involved in the nursing care of infants and children to prevent infant morbidity and mortality, hence it is crucial to take into consideration what these category of nurses are learning in the nursing institutions, and whether

adequate numbers are being trained annually which is why this study is been carried out.

The training of health professionals is mainly the responsibility of universities and Departments of Health (Coetzee, 2014). Coetzee 2005 argues that 'children's nursing education requires the integration of several different core features which include; pathologies and physiological differences related to childhood development, different knowledge and skills related to the significant variability of responses, behaviours related to the developmental stage and ability of children, specific challenges of shared decision making and the participation related to attachment of family function and coping' (Coetzee, 2005).

According to Oermann and Lukomski 2001, 'the goal of any nursing curriculum is to provide students with the underlying concepts, professional values and beginning skills to practice nursing in a variety of health care settings and this nursing education takes place in both the classroom and clinical setting' (Oermann and Lukomski, 2001). Oermann and Lukomski further reports that the classroom instruction for nurses focuses primarily on concepts and theories for practice, while the clinical practice area provides a real-life experience for applying knowledge into practice, building and strengthening technological skills, and developing critical thinking and problem-solving abilities as they relate to patients and their families (Oermann and Lukomski, 2001). Therefore, preparing the nursing students for professional practice includes both the theoretical foundations of nursing and the clinical experience, and learning about health problems of children and their management are the important outcomes of clinical experiences in child health nursing (Oerman and Lukomski, 2001).

Teaching and learning are vital aspects within any clinical setting, as they generate the evolution of knowledge, skill and attitude including the integration of theory and practice, thereby ensuring the development of competent health care practitioners (Lambert and Glacken, 2004). However, confusion and uncertainty exists over the extent of and the actual role of the

nursing educators in the clinical settings and over who is more responsible to teach the nursing students (Clifford, 1993; Lambert and Glacken, 2004).

Swingler et al. recommends that paediatric specialist training should include compulsory registrar placements for at least six months at regional hospitals, including supporting child health services in surrounding district hospitals and primary health care facilities (Swingler et al., 2012). In addition, Coetzee 2014 suggests that the training of child nurses should prioritize what the child nurses need to know, and how they would develop the relevant clinical and contextual knowledge and competencies required to work efficiently with children, their families and the populations at large.

Basically, most of what the child nurses are trained to do is vital in addressing the preventable factors that leads to under-five morbidity and mortality in SA (Coetzee, 2014). The SANC considers that, children's nursing competencies transcend settings in which child nursing is rendered (community, healthcare environment, rural and urban) and as a group, child nurses provide other varieties of care such as oncology, renal diseases and critical care (SANC, 2012). The SANC also identified some core competencies of child nurses in SA which include; critical care nursing of sick neonates requiring intensive specialised care, neonatal nursing for the first 28 days of life of a healthy neonate, IMCI and neonatal surgical emergencies (SANC, 2012).

Khair 2002 recommends that child nurses must recognise that they play an important role as advocates for children and their families, and this can be strengthened when a nurse carefully listens and understands the child's views, and also when the child nurse plays an integral part in planning and explaining care to the child (Khair, 2002). This suggests the importance of patient-centred care needed to improve health outcomes of the population. According to Coetzee 2014, the primary role of the child nurses involves directing nursing care to decrease mortality and morbidity of infants and children in the hospital settings (Coetzee, 2014). Therefore, can children's nursing training be prioritised as part of health systems strengthening?

It is critical to consider the importance of contextualized learning, whereby the new knowledge and skills gained are easily applied in practice, and the

benefits of ensuring that the training needs of children's nursing corresponds with the local population health needs in SA (Swingler et al., 2012; Coetzee et al., 2016). Coetzee et al. 2016 argues that the education that are mostly offered to child nurses in Africa are derived from the curriculum that are specific to Europe and North America. This indicates the need to prioritize contextualized learning, so as to ensure that knowledge gained by the child nurses corresponds to the childhood burden of disease in SA. Establishing a sustainable children's nursing workforce capacity in SA, will require careful consideration of where and what the nurses are learning, as well as creating training programmes which can continue to support improved health outcomes of children in SA. McKerrow 2014 recommends that the continual progress in reducing under-five mortality will require a nurse workforce that is better prepared to provide child appropriate health services at all levels of the health system (McKerrow, 2014).

This challenge has been taken up in Malawi and South Africa, where a study to develop a community-based participatory action research intervention to establish sustainable region appropriate paediatric nurse training capacity by interdisciplinary educators and health researchers is under-way in these two countries. This has already led to the development of three new paediatric nurse training programmes in Malawi and two new curricula in SA and the curriculum contains elements that are specific to lower income resource settings in the global south (Coetzee et al., 2016).

Conclusion

Reducing infant and child mortality originally articulated in the MDG 4, remains a global priority now conveyed through the sub-goal 3.2 of the SDGs (United Nations, 2015). The outcomes, distribution and pattern of child morbidity and mortality in SA are shaped by persistent inequalities which is worsened by growing inequalities in employment and income status across different population groups in the country (SAHRC & UNICEF, 2016). It is recommended in several literatures that majority of the child death causes in SA which are mostly preventable, can be alleviated by the intervention of

skilled child nurses (South Africa Department of Health, 2011; Stephen et al., 2011; McKerrow, 2014; Coetzee, 2014). Thus, this can be achieved through proper training of sufficient numbers of child nurses and ensuring that their training aligns with the health needs of infants and children in SA (South Africa Department of Health, 2011; Stephen et al., 2011; Coetzee, 2014; McKerrow, 2014; Coetzee et al., 2016).

Effective training of child nurses is crucial in addressing the high rate of infant and child mortality, yet SA the country with the highest health worker density on the Africa continent has less than 2% of RNs who are paediatric trained (Coetzee et al., 2016). This suggests the urgent need to scale up children's nursing training, including strengthening their curricula and increasing the numbers trained annually in SA. The redesign of the children's nursing curriculum requires both the redesign of the context and the orientation of its components, as well as the redesign of the teaching and learning strategies being used (Coetzee, 2014).

SA is faced with limited child nursing professionals who can adequately care for ill children in the health facilities, therefore it is necessary that these category of health workers become well recognised and taken more seriously, especially in terms of their training needs and the roles they can play in managing childhood conditions at the health facilities. However, despite the important roles the child nurses play in the health care system (which is the care of infants and children), they are still limited studies on their education and training situation. There are very limited research documents/articles (both here in SA and internationally) on children's nursing training in particular, which is why this study seeks to create that awareness on the relevance of children's nursing training as part of the strategy for improving child health needs in South Africa. Therefore, this study aims to address this gap and create the knowledge of the current profile of children's nursing training in SA, as well as generate adequate insight on their curriculum foci in SA.

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Part C: Journal Manuscript

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The Current Situation of Children's Nursing Training in South Africa

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Abstract

Background: The majority of infant and child death causes are preventable with the intervention of skilled Child Nurse Specialist (CNS). Therefore, it is important to know what the child nurses are learning and whether sufficient numbers are being trained to deliver competent health services to children in South Africa (SA).

Objectives: This study seeks to describe the current situation of children's nursing training in SA, so as to help inform human resource training plans for child nurses who can assist in improving the health of infants and children in SA.

Methods: A mixed method design, comprising qualitative and quantitative methods was used for the study. A documentary review was applied to extract qualitative data from five documents on the current policy and legislative framework for general nursing and children's nursing in particular. The workshop minutes of a sentinel Nurse Educator Forum that took place at Groote Schuur hospital in December of 2016 was used as an important secondary data source. Additionally, primary data collection from seven purposively sampled Nursing Education Institutions (NEIs) that host child nursing programs in SA was conducted via self-administered structured questionnaires to extract qualitative and quantitative data on the curriculum foci and profile of child nurses in SA.

Results: Findings from the documentary review suggests the need to improve the NEIs and training programs of nursing in SA, by ensuring that all nursing colleges are transitioned into Higher Education Institutions (HEIs), review nursing curricula guidelines and promote the production of nurses especially the nurse specialists who are trained in a specific field of practice, such as the child nurses.

Findings from the questionnaire survey shows that a total of 637 child nurses were enrolled from 2012-2016 across five NEIs and of the 637 trainees, 587 graduated successfully which qualified them as a CNS in SA. More so, they were more women than men who enrolled for children's nursing training in SA. Of the 637 nurse trainees, 60 nurses came from outside SA to enroll for children's nursing training in SA.

The curriculum components of the children's nursing training across the five NEIs in SA were similar, although variations exist in the extent the topics were covered across the nursing institutions. For example, some topics were fully covered, not covered at all or covered to some extent. The curriculum content of child nursing in SA contains topics that aligns with the childhood burden of diseases in SA.

Conclusion: The study findings reveals that huge efforts are made by the NEIs to supply sufficient and qualified CNS in SA, although the numbers are still few to cope with the childhood burden of diseases in SA, which suggests the need to strengthen the capacity of NEIs to train and graduate more numbers of skilled child nurses who can help improve the health of children in SA. In addition, the curriculum of child nursing needs to be reviewed and standardized in SA to provide competencies which are relevant to clinical practice.

Introduction

Globally, there has been improvements in the rate of child survival over the past two decades, but the progress has not been evenly distributed both across and within countries ^[1, 2]. Child health status in SA has improved to some extent in the past years, but when compared with other low and middle income countries, it is considered to be unfavorable ^[3]. The distribution of under-5 mortality rate (U5MR) in SA is shaped by persistent inequalities across different provinces and population groups, and these inequalities are worsened by the inequalities in employment and income status ^[4, 5].

Most childhood burden of disease in SA include: prematurity, birth asphyxia, sepsis, diarrhea, pneumonia, malnutrition, Human Immune-deficiency Virus (HIV), Acquired Immunodeficiency Syndrome (AIDS), acute respiratory illnesses, malnutrition and tuberculosis ^[5, 6, 7]. Ensuring skilled child nurses are available to care for sick children has being recommended in various literatures as a strategy for improving the child health outcomes in SA ^[6, 8, 9].

Swingler et al. ^[10] have questioned whether pediatricians training was aligned with SA child health needs, a question that is yet to be fully investigated in relation to children's nursing training in SA ^[10]. Similarly, Coetzee et al. argues that the education offered to child nurses in SA has been derived from curriculum specific to Europe and North America and therefore, suggests the urgent need to prioritize contextualized learning for children's nursing training in SA ^[11].

It is important to increase the number of children's nursing workforce, although increasing their numbers alone would have no impact on child health outcomes, if the child nurses are not learning the appropriate competencies that are relevant for addressing child health needs in SA [8]. Therefore, it is necessary to ensure appropriate training of children's nursing that will support the acquisition of locally relevant clinical and contextual knowledge and skills [8]. This explains the importance of reviewing the current situation of children's nursing training in SA, so as to explore what the child nurses are learning, whether sufficient numbers are being trained and how their skills can contribute to improving the health outcomes of children in SA.

Methods

This descriptive study, which is a situational analysis of children's nursing training in SA employed mixed methods comprising qualitative and quantitative data collection methods to address the research questions. The study combined primary data collection with an analysis of key secondary data sources. Primary data collection was done using a structured self-administered questionnaire where purposively sampled key informants who are nursing educators addressed a combination of qualitative and quantitative questions. The questionnaire was developed by applying the basic principles that informs a good questionnaire design. The secondary component of the study was a documentary review, where a thematic analysis was employed for analyzing the documentary content. The documents for review include appropriate policy and strategy documents that contains the policy and legislative framework for general nursing and specialist nurse training. Data extraction sheet was used to group and synthesize data from the documentary review. The workshop minutes of a sentinel Nurse Educator Forum that took place at Groote Schuur hospital in December of 2016 was included as an important secondary data source. The qualitative part of the study addressed the curriculum component of children's nursing training, as well as the policy and legislative framework of general nursing and children's nursing training, while the quantitative data collected focused on the number of child nurses trained annually for a period of five years across all the nursing institutions that conducts children's nursing in SA.

Purposive sampling technique was employed to identify the nursing schools that conducts children's nursing training in SA and one key informant who have expert knowledge in child health nursing was purposively sampled from each nursing institutions for inclusion into the study. A total of seven accredited NEIs that host children's nursing training in SA were identified as an inclusion criterion for the study. The seven NEIs were discovered by using the

Forum of University Nursing Deans in South Africa (FUNDISA) directory and the South African Nursing Council (SANC) website and confirming these institutions with key experts who are nursing educators at the Red Cross War Memorial Children's Hospital. In addition, one key informant from each nursing institution who are child nursing educators with expertise knowledge in child health nursing were selected as an inclusion criterion for the study. The key informants were established by reviewing the SANC website and confirming with colleagues who are child nursing educators at the Red Cross War Memorial Children's Hospital. Informed consent forms were sent to key informants via email to seek their voluntary participation in the study. After participants have signed and returned the consent forms to the investigator, a self-administered structured questionnaire was sent to the respondents through email and phone calls was used for follow up. The questionnaire was used to extract data on the current profile of children's nursing training, including the numbers trained annually over a five- year period and the curriculum content of children's nursing training in SA.

For the data analysis, qualitative data from the structured questionnaires and documentary reviews was coded, synthesized and analyzed using format in qualitative thematic analysis (Sandelowski, 2000), while the quantitative data was a simple descriptive data from the questionnaires which was analyzed using descriptive statistics feature in excel and simple proportions were generated. Graph and tables to display proportions and trends per institution over the past five years were generated from excel spread sheet data using excel graph functions.

Results

Documentary review

Five documents were identified for review, which provided information regarding the legal, policy and regulatory framework relevant to general nursing and children's nursing training in SA. Three key themes as identified from the documentary review are discussed next.

Strengthening Nursing Education and Training Practice in SA

Strengthening the nursing education and training practice in SA is the major goal of the SANC, and whilst the documents largely discussed this for nursing in general, it has equal relevance

for children's nursing. Of the five documents reviewed in this study, two suggests strengthening nursing training by improving the learning environments of the nurses, structuring curricula to align with clinical practice and improving the production of more nurse specialists with expertise knowledge. Therefore, strengthening the learning environment of child nurses and structuring their curricula to meet the needs of children in SA, can help in reducing the high rate of infant and child mortality in SA.

The 'National Strategic Plan for Nurse Education Training and Practice' ^[7], a recent document that provides strategic direction for nursing training in SA, confirms the importance of improving the existing output of nursing training in SA in terms of the quality and numbers of nurses trained ^[7]. The document ^[7] states that this can best be achieved by transforming all nursing colleges into Higher Education Institutions (HEIs) as per the National Qualification Framework (NQF) (Act No. 67 of 2008) for a better learning environment for the nurses and failure to realize this, will lead to severe nursing shortage in SA. More so, the document ^[7] reports increasing the production of nurses with advance knowledge in a specified field of practice registered with the SANC and the need to review the nursing curriculum at least every 3-5 years to ensure the priorities in clinical practice are taught in theory and that theory is in line with the current practice in SA. These strategies, if applied to child nursing by increasing their production and reviewing their curricula every 3-5 years to ensure they align with clinical practice, can assist in improving the health of sick infants and children who present at the health facility.

The second document called 'SANC Standpoint on Public Nursing Colleges' ^[12], suggests in a similar way, the need to support all public nursing colleges to produce adequate and high quality nurses needed to address community health needs in SA by transitioning all public colleges in SA into HEIs in accordance to the NQF Act No. 67 of 2008 and strengthening nursing curriculum guidelines and training standards in order to produce high standard of nurse professionals to deliver needed health services in SA ^[12]. A number of current children's nursing training institutions are already located within HEIs, but for those that are not, these proposals have important organisational transformation implications.

Primary Roles of the Nursing Practitioner

From the documents reviewed, two documents posit the primary roles of the nursing practitioners, which is to deliver effective health care and improve the health of the whole populations.

One of the document titled ‘Code of Ethics for Nursing Practitioners in South Africa’ ^[13], indicates that the primary role of all nursing practitioners is to provide effective health care to the public, and also to support and respect rights to life, rights to human dignity and the rights of other persons ^[13]. Therefore, every child nurse is obligated to carry out this roles and responsibilities in order to improve the health of children in SA.

The second document called: ‘Competencies for Paediatric Nurse Specialist’ ^[14], suggests that child nurses are responsible for preventive, treatment and rehabilitative health care services, as well as referral of very sick children to a higher level of care, mostly in the hospital settings ^[14]. This document also proposes that they are several overlaps of competencies between different nurse specialties and they include competencies in critical care nursing of sick neonates requiring specialised care, midwifery, neonatal nursing, IMCI (neonates), neonatal surgical emergencies and delivery of Primary Health Care Services (PHC) ^[14].

Becoming a Child Nurse Professional

Of the five documents reviewed, two of the documents gives direction on what being a CNS in SA entails. The ‘Advanced Practice Nursing’ ^[15] document reports that an Advanced Practice Nurse (APN) is a general nurse/midwife with an expertise knowledge in a specific practice area and would require a postgraduate diploma in that specific practice, such as the children’s nursing practice, which will require professional registration with the SANC ^[15]. The document ^[15] reports that a nurse specialist must be prepared to acquire knowledge beyond that of a general nurse through an approved professional education programme and the specialization area must be registered with the SANC. This document supports the need for nurses to go beyond being a general nurse practitioner, to becoming a specialist nurse with an advanced knowledge, such as becoming a CNS. This policy therefore promotes the need to encourage more specialist nurses in the health workforce in SA.

The ‘Competencies of Paediatric Nurse Specialists’ ^[14] give some direction as to what the requirements are for becoming a CNS, and indicates that the individual must have obtained a postgraduate diploma qualification in child nursing science registrable with the SANC as a CNS ^[14]. The document ^[14], also emphasises that a nurse specialist must be prepared to acquire knowledge beyond that of a general nurse through an approved professional education program and the specialization area must be registered with the SANC.

From the review of these documents, it is seen that a nurse specialist is a general nurse with an advanced expertise knowledge in a particular field, such as the child nurses. More so, the findings show that to improve the nursing profession, it is important to scale up more supply of professional and competent specialist nurses which is achievable by strengthening the education and training institutions of the nursing programs, as well as developing a nursing curricula that constantly aligns with health care needs of the population. Revitalising children’s nursing training by following this strategic framework identified in the documents reviewed, can help produce adequate supply of skilled child nurses who are ready to deliver competent services to sick children at the health facilities.

Questionnaire Survey

Overview of Children’s Nursing Education and Training in SA

A total of seven questionnaires were distributed to the nursing educators across five different NEIs. Of the seven questionnaires distributed for the study, five were completed and returned, while the remaining two institutions were unable to participate in the study. One institution declined citing heavy organizational demands, while it was not possible to secure research approval from provincial level for the other institution during the period of this study.

All five institutions offer accredited child nursing programs registered with the SANC as a CNS. Among the five nursing institutions, four of the institutions deliver one-year program and the fifth institution’s program runs for over two years. In addition, of the five nursing institutions that participated in the study, four were based at universities, while one institution was based at the nursing college. The findings from the questionnaire survey are illustrated by identifying four main themes. They include:

000Description of the Children's Nursing Training in SA

Institutions differed in the naming of their programs. Three NEIs offer a Diploma in Child Nursing Science, whilst the other two NEIs offer Postgraduate Diploma in Child Nursing and Child Nursing Critical Care and an Advanced Diploma in Child Health Nursing.

From the Nursing Educators Forum document, it was identified that the two institutions that did not participate in the study offers child nursing as Post Basic Diploma in Child Nursing Science.

Interestingly, the curriculum content across programs is very similar, despite the differing program naming.

The basic entry requirements for children's nursing training for three NEIs include; 4 -year Bachelor's Nursing Degree or 4- year Nursing Diploma which is registered at the SANC as a Registered Nurse (RN) or Registered Midwife (RM) and two years' clinical experience in Child Nursing. One institution requires for its entry, a Bachelor's Nursing Degree or 4-year Nursing Diploma. This requirement is similar to the entry requirements of the first three NEIs, but the institution requires no clinical experience in Child Nursing for admission into children's nursing program. The final institution's requirements include being a RN or RM with one- year experience in children's nursing.

Profile of Children's Nursing Training in SA

The five NEIs enrolled a total of 637 child nurses from 2012-2016 (see table 1). Of these 637 nurses enrolled, 587 successfully graduated giving a throughput rate of 92%, which is exceptionally high and represents a substantial achievement in the production of child nurses in SA. The numbers of enrolled nurses (637) over a five- year period are also substantially higher than anticipated, which bodes well for children's nursing. From the Nursing Educators Forum document, the numbers of graduates across all seven NEIs were obtained for 2015, and shows that the two institutions which did not participate in the study also produced considerable numbers, having produced 22 and 20 numbers of child nurse graduates in 2015. It is therefore fair to assume that over a five-year period, these two institutions have added a considerable additional number of child nurses to the current total estimate.

The total number of child nurses across five NEIs in SA over a five-year period are represented in table 1 below:

Table 1: Profile of Child Nurses across Five NEIs from 2012-2016 in SA

Year	Total Number of Enrolled Child Nurses from 2012-2016 across Five Institutions	Total Number of Child Nurses Who Graduated from 2012-2016 across Five Institutions	Total Number of Enrolled Male Nurses from 2012-2016 across Five Institutions	Total Number of Enrolled Female Nurses from 2012-2016 across Five Institutions	Total Number of Enrolled Nurses from Outside South Africa from 2012-2016 across Five Institutions
2012	122	114	3	119	15
2013	129	116	10	119	14
2014	133	128	3	130	13
2015	135	125	9	126	11
2016	118	104	6	112	7
Total	637	587	31	606	60

From table 1, a total of 637 enrolled child nurses and 587 graduates across the five NEIs show that efforts are being made by the NEIs to scale up sufficient child nurses both in SA and for other countries. Child nurses from other countries came from; Swaziland, Uganda, Tanzania, Nigeria, Lesotho, Malawi, Botswana, Ghana, Zambia, Kenya, Namibia and Mauritius. Therefore, this demonstrates a considerable in-roads being made between Southern and East Africa for children's nursing capacity.

Some respondents pointed out that foreign students find it difficult to get registered with the SANC on time before commencing with their child nursing program, as registration with the SANC take lots of time to process. This delay turns away some international students from commencing with their children's nursing training in SA. This can be seen as a barrier in admitting more number of child nurses in the nursing institutions. This shows that there is more capacity for child nurses to be admitted, if setbacks like delay in registration with the SANC are strictly addressed.

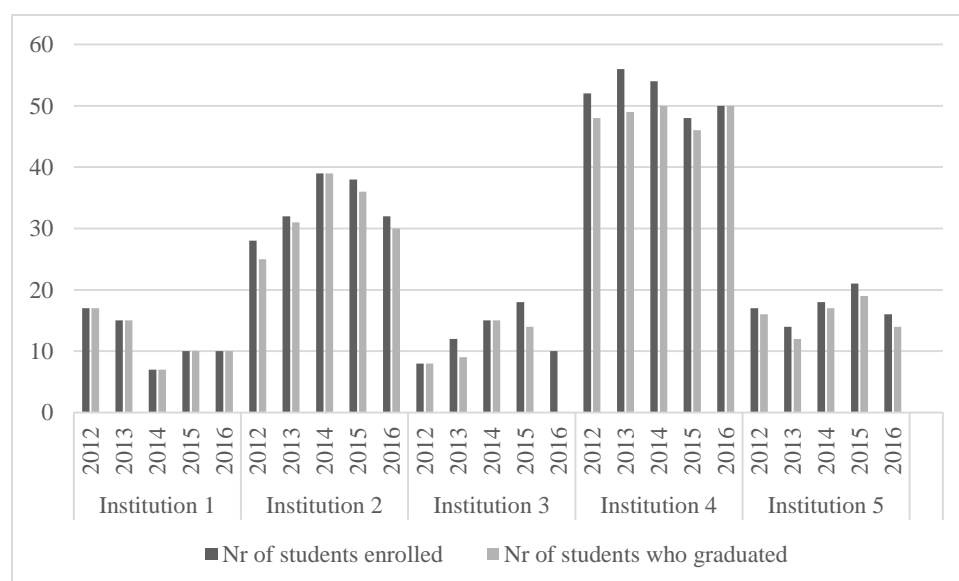
Respondents also highlighted that lack of incentives in terms of remuneration for the children's nursing training in the public sector hindered the number of child nurses trained annually in their institution. This can also be seen as a barrier in the production of more child nurses in SA. Therefore, there is need for the government to create more funds and scholarships necessary to strengthen the child nursing capacity in SA.

It was also identified in the study findings that some prospective students were denied admission because they do not meet the institution's stipulated requirements. This shows that the nurse learners have the motivation and willingness to enroll for children's nursing program in SA, despite their incomplete admission documentations. Therefore, the nursing schools can adjust their admission requirements and make it less complex for the nurse learners to enroll into their institutions.

Unsurprisingly, the majority of child nurse trainees are female. However, considering the small percentage of males in SA nursing in general, the 5% of male child nurse enrollees is encouraging.

The annual numbers of children nurse trainees and graduates across five NEIs are shown in figure 1.

Figure 1: The Annual Numbers of Child Nurse Trainees and Graduates for Each Institution from 2012-2016



From figure 1, it is clear that across the five institutions, child nurses are being enrolled annually, and almost all the enrollees successfully graduated from the children's nursing training. This indicates a significant success in the training of health care professionals in SA, more specifically child health nurses.

From the findings of the study, the five institutions reported that the maximum capacity of students they can enroll per year in their institution are; 30, 20, 20, 30 and 25 respectively. Suppose these number of nurses were enrolled into the respective NEIs, it means that for a five-year period, the total number of child nurses that will be accommodated into each institution are 150, 100, 100, 150 and 125 respectively. However, from the results of the study, the actual number of child nurses who enrolled for a five- year period across each institution were; 59, 169, 63, 260 and 86 respectively.

It is seen that out of 150 child nurses that could have been enrolled in institution 1, only 59 was actually enrolled leaving a huge gap of 91 child nurses untrained, which is a setback in the production of children's nursing workforce. In addition, out of 100 students that could have been trained in children's nursing in institution 2, 169 child nurse trainees were already enrolled, which suggests an excess of 69 child nurses already in child nursing training. This is seen as a good remark and achievement in the production of child nurses in SA. In addition, institutions 3, 4 and 5 each have maximum capacities of 100, 150 and 125 that could have been enrolled, but from the findings the three institutions actually trained 63, 260 and 86 respectively. This shows a gap of 37 child nurses untrained, excess of 110 child nurses already enrolled and 39 nurses untrained.

These findings show that a total of 167 child nurses were not accommodated for children's nursing training across the five NEIs and an excess of 179 child nurses were already trained across the five NEIs in SA. This is a significant achievement in the production of child health nurses in SA, which means that there is room for more child nurses to be trained in SA nursing schools. This achievement falls in line with the findings from the policy and strategy documents from the documentary review, which suggests the need to strengthen the nursing education and build up more professional nurses with a specialized field of practice in SA, so as to improve the health of the whole communities.

From the findings of the study, the five NEIs began their children's nursing program at different points in time. Out of the five institutions, two began their children's nursing training as far back as 1978 and 1982 respectively. In addition, two other institutions both began in the year

2000 and the final institution started child nursing training in 2003. This suggests that the nursing institutions in SA are becoming more aware and motivated on the need to produce adequate supply of skilled nurses trained in child health nursing.

Where Nurses Work After Graduation

Of the five NEIs who participated in the study, three institutions indicated that their child nurse graduates primarily work in public health sector hospitals, whilst one institution reported that their child nurse graduates prefer to work in the private health sector. This indicates that child nurses predominantly work in the hospital settings where very sick children are found, meaning that other levels of the health care system may have paucity of adequately trained child nurses.

Curriculum Foci of Children's Nursing Training in SA

The five NEIs reported fully on their curriculum components and how the courses are covered and conveyed to the students. The extent to which courses were covered was structured from 1 (not covered at all) - 6 (fully covered) and the way the courses were conveyed was structured as, either via classrooms (Yes or No), clinical placements (Yes or No) and assessment (Yes or No).

The curriculum component which exhibited the greatest range in self-scoring were; basic care of common childhood illnesses, exposure to modern modalities of care and feeding programs, infant and child feeding and nutrition, recognition and detection of malnutrition, management of ill children in hospitals, Integration and Management of Childhood Illnesses (IMCI), initiation and support of breastfeeding in newborns, resuscitation of newborns and care of small newborns according to standard protocols, kangaroo mother care, trauma, resuscitation and emergency care, growth monitoring and promotion, promotion of breastfeeding and appropriate complementary feeding practices, leadership development, training in clinical governance and quality improvement. These topics were reported by majority of the NEIs to be covered to a very high degree, including via classroom, clinical instruction and assessment.

These finding shows a significant achievement in the production of skilled child nurses who have the appropriate knowledge and competencies required to care for ill children at the health facilities. For example, as reported earlier in the study, most preventable causes of child deaths

in SA are due to common childhood illnesses such as malnutrition, respiratory infections and diarrhoea. A child nurse who is taught to a full extent on promotion of breastfeeding in newborn and appropriate complementary feeding programs is more likely to deliver effective services to infants and children who are malnourished than a child nurse who wasn't taught at all on those topics or who was taught to a small degree. This suggests the importance of strengthening children's nursing training in order to produce nurses who have the skills needed to improve the health of the children.

Additionally, the curriculum component with the lowest range in self-scoring were neonatal care and helping babies breathe. This indicates that infants with respiratory illnesses are more likely to be deprived of quality health care services at the health facilities, or a child nurse who lacks the knowledge in helping babies breathe and caring for neonates is less likely to deliver the appropriate care to infants and children with such conditions in the health facility. Therefore, there is a dire need to strengthen and standardize the curricula of child nursing and align training with health needs of children in SA.

DISCUSSION

This study seeks to examine what child nurses in SA are learning and whether their output is adequate enough to deliver competent health services to children in the health facilities. The response rate of five out of seven NEIs that host children's nursing training in SA was encouraging and suggests a high level of engagement by the child nurse educators. This discussion will be grouped into three key themes, which include:

Alignment of Children Nursing Curricula and Childhood Burden of Diseases in SA

Majority of the respondents indicated that they considered most of the topics to be covered to a full extent, including via classroom and clinical placement and assessment. The finding of the study shows that the curriculum structure of children's nursing training in SA is similar across the five NEIs because the same topics are taught by all the institutions. In addition, the curriculum components taught to the nurse trainees coincides with the childhood burden of disease in SA. However, variation exists between the curriculum components taught by the nursing schools, such as the extent in which they were covered (Ranging from: 1 =Not Covered

at all to 6 =Fully Covered) and how they were conveyed and assessed (Either via Class Room, Clinical Placements and/or Assessments).

There is significant success in the way the curriculum components were delivered across the institutions, as almost all the topics were fully covered via classroom and clinical placement and assessment. This can help produce high effective children's nursing professionals who are adequately equipped to address the priority health needs of children in SA. However, the variation in the degree some topics are taught and conveyed, can hinder some nurses from acquiring the relevant skills and knowledge that are needed to address the high infant and child morbidities and mortalities in SA.

The structure of the children's nursing curricula and how they are conveyed (through classroom and clinical instruction and assessments), is able to equip the child nurses with the right skills to address the health needs of children in SA. This is because the children's nursing training courses aligns with the childhood burden of diseases in SA and combining classroom learning with clinical practice tends to adequately provide the nurses with the practical skills and knowledge needed to make them work-place ready.

However, there is dire need to standardize and regularly review the children's nursing curricula, so as to address the gap of having to produce some qualified child nurses who are adequately competent and others who are not.

According to Coetzee 2014, the standardization of curricula that focuses on key child health priorities in SA will be beneficial in addressing child health in SA ^[8]. In addition, there is need to review children's nursing curricula at-least every 3 to 5 years as recommended by the SANC in document ^[7]. This can help to ensure that the curricula of child nursing adequately aligns with the health needs of children in SA. The World Health Organization (WHO) also recommends that the health professional education and training institutions must adapt a curriculum that matches the changing health needs of the populations ^[16].

Numbers of Children Nurses Trained in SA

The finding of the study shows that the number of child nurses who were enrolled and those who graduated across five NEIs in SA had a significant throughput of 92%, which is a very remarkable achievement in the production of skilled child nurses in SA. As reported previously,

SA produced 587 child nurse graduates in five years across five institutions, which suggests great achievement in scaling up the children's nursing workforce. The document from the Nurse Education Forum held in Dec 2016 reports that a total number of 179 child nurse graduates were produced in 2015 across seven NEIs in SA and were awarded Postgraduate Qualification in Children's Nursing. This shows a remarkable attainment in the production of child nurses across all seven NEIs that host child nursing in SA. Therefore, efforts are being made to increase the production of competent child nurses in SA.

However, the number of child nurses are still few to respond to the child health needs in SA. This is because the birth rate in SA is about one million births per year and the numbers of registered child nurses per year are limited to make significant impact in reducing the high U5MR in SA ^[8, 17]. In addition, the recommendation for addressing U5MR in SA, is that there should be a trained CNS in every children's ward at district and secondary levels of care, and one per shift in tertiary hospitals in SA ^[9].

Nonetheless, the scarcity of skilled nurses has been identified as a barrier in realizing an effective health care system ^[11, 18, 19]. But, several literatures advocates strengthening the output of children's nursing training, in order to reduce the high U5MR in SA ^[6, 8, 9]. Therefore, in order to ensure access to effective health care for sick children, more supply of CNS should be made readily available, by admitting and graduating more child nurses with the right knowledge for addressing childhood illnesses in SA. The SANC should encourage nurses who come to enroll from outside SA by facilitating their registration process. More so, the learning environment of the NEIs should be strengthened, so as to help motivate the nurse learners and educators, which can in-turn facilitate the production of more skilled child nurses in SA.

Profile of Men and Women in Children's Nursing Training

Gender is a very powerful factor in the choice of nursing as a profession. According to the findings of the study, there were more women than men who enrolled for children's nursing training in SA. Therefore, women are more likely to consider nursing as a profession than men ^[20, 21]. However, there should be mechanisms for encouraging more men who would want to take up nursing as a profession, so as to increase the capacity of the child nursing workforce in SA.

Conclusion

If the health of children under-five years of age is to be improved in SA, policy makers and the government must ensure that access to equitable, quality and affordable health care services are made available to children who need them. In light of this, it is important that the curriculum of the child nursing institutions are constantly reviewed, standardized and strengthened to align with the priority health needs of children in SA. The government should grant more funds to the existing NEIs that host children's nursing training and expand their capacity to enroll and graduate more numbers of child nurses in SA.

List of Abbreviations

AIDS	Acquired Immunodeficiency Virus
APN	Advanced Practice Nurse
CNS	Child Nurse Specialist
CoMMiC	Committee on Morbidity and Mortality in Children Under-5 Years
DoH	Department of Health
FUNDISA	Forum of University Nursing Deans in South Africa
HIV	Human Immune-Deficiency Virus
HEIs	Higher Education Institutions
IMCI	Integrated Management of Childhood Illnesses
MDG's	Millennium Development Goals
NEIs	Nursing Education Institutions
NQF	National Qualification Framework
RN	Registered Nurse
RM	Registered Midwife
SA	South Africa

SANC	South African Nursing Council
SDGs	Sustainable Development Goals
U5MR	Under-5 Mortality Rate
WHO	World Health Organization

Authorship

Uchenna Nneka Chukwu is responsible for the conceptualization, design, analysis and interpretation of data, drafting and critical revision of important scientific content of this study.

Conflict of Interest

The author declares that she has no competing interests.

Research Ethics Committee Approval

This research study was approved by the University of Cape Town Faculty of Health Sciences Human Research Ethics Committee, HREC REF: 717/2016.

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Appendices

Appendix 1

DATA EXATRCTION FORM FOR THE DOCUMENTARY REVIEW

Document no:	Name of Document	Date published	Nature of document (e.g. policy, law curriculum outline, training guidelines etc.)	Purpose of document	Specific relevance to nurse training in general and children nursing more specifically.
1.	The National Strategic Plan for Nurse Education Training and Practice 2012/13-2016/17	2013	This is a national policy document on strategies for strengthening nursing education and training programmes in South Africa.	The purpose of the document was to reconstruct and revitalise the Nursing Profession in order to ensure that nursing and midwifery practitioners are equipped to address the disease burden and population health needs within a revitalised health care system.	This document suggests that it is urgent that the education and training of nurses are strengthened by declaring all nursing colleges as HEIs in compliance with the Higher Education Act in 2008, ensuring curriculum for nursing education and training are reviewed every 3 to 5 years to make sure that the priorities in clinical practice are taught in theory and theory is the appropriate with the current practice and also the need to train more nurse specialists with advance expertise knowledge such as children nursing which are registered with the SANC.

DATA EXATRCTION FORM FOR THE DOCUMENTARY REVIEW

Document no:	Name of Document	Date published	Nature of document (e.g. policy, law curriculum outline, training guidelines etc.)	Purpose of document	Specific relevance to nurse training in general and children nursing more specifically.
2.	SANC Standpoint on Public Nursing Colleges Transition into Higher Education.	2016 (Under the provisions of the Nursing Act, 2005)	This is a strategy document which was developed by the SANC to continually support public nursing colleges when working towards becoming higher education institutions	The purpose of the document is to provide support for public nursing colleges so as to ensure adequate and quality production of nurses to address community health needs in SA.	This document reports on the need to strengthen the production of the nursing professionals by training up appropriate categories of nurse specialists and also by transitioning all public nursing colleges to HEIs as per the NQF Act No 67 of 2008.

DATA EXATRCTION FORM FOR THE DOCUMENTARY REVIEW

Document no:	Name of Document	Date published	Nature of document (e.g. policy, law curriculum outline, training guidelines etc.)	Purpose of document	Specific relevance to nurse training in general and children nursing more specifically.
3.	Code of Ethics for Nursing Practitioners in South Africa	2013	This is a policy document that remind all nursing practitioners in SA of their primary responsibilities towards individuals, families and the communities at large.	The purpose of the code of ethics is aimed at informing nursing professionals of their ethical and moral responsibilities as health care practitioners.	The document states that the primary roles of all nursing practitioners is to provide effective health care to the public and to support and respect rights to life, rights to human dignity and the rights of other persons.

DATA EXATRCTION FORM FOR THE DOCUMENTARY REVIEW

Document no:	Name of Document	Date published	Nature of document (e.g. policy, law curriculum outline, training guidelines etc.)	Purpose of document	Specific relevance to nurse training in general and children nursing more specifically.
4.	Competencies for Paediatric Nurse Specialist	2012	This is a strategy document that provides guidelines for becoming a Child Nurse Specialist.	This document was developed to provide key competencies of children nurses and requirements needed to become a child nurse in SA.	This document posit that the primary roles of the children nurses is to deliver preventive, treatment and rehabilitative services, including referral of very sick children to a higher level of care. The document also indicates that to become a Child Nurse Specialist will require obtaining a Postgraduate Diploma in Child Nursing Science which is registrable with the SANC.

DATA EXATRCTION FORM FOR THE DOCUMENTARY REVIEW

Document no:	Name of Document	Date published	Nature of document (e.g. policy, law curriculum outline, training guidelines etc.)	Purpose of document	Specific relevance to nurse training in general and children nursing more specifically.
5.	Advanced Practice Nursing	2012	This is a policy document that clarifies what an Advanced Nursing Training entails in SA.	The purpose of this document is to specify the qualifications and requirements of Specialist Nurse training in SA.	This document reports that an Advanced Practice Nurse (APN) is a general nurse with an advanced expertise knowledge in a specific area of practice and to be qualified as an APN, will require obtaining a Postgraduate Diploma in a specific area of practice such as Children Nursing practice which is registered with the SANC.

Appendix 2

Comprehensive Breakdown of the Annual Numbers of Children Nurses Across Five NEIs in South Africa from 2012-2016.

	2012	2013	2014	2015	2016	2012	2013	2014	2015	2016	2012	2013	2014	2015	2016
Number of Students Enrolled	17	15	7	10	10	28	32	39	38	32	8	12	15	18	10
No of Students Who Graduated	17	15	7	10	10	25	31	39	36	30	8	9	15	14	0
No of Males	0	1	0	1	0	3	5	2	4	3	0	0	1	2	1
No of Females	17	14	7	9	10	25	27	37	34	29	8	12	14	16	9
No of Students from Outside South Africa	3	2	2	2	0	12	11	11	9	7	0	0	0	0	0

Comprehensive Breakdown of the Annual Numbers of Children Nurses Across Five NEIs in South Africa from 2012-2016.

	2012	2013	2014	2015	2016	2012	2013	2014	2015	2016
No of Students Enrolled	52	56	54	48	50	17	14	18	21	16
No of Students Who Graduated	48	49	50	46	50	16	12	17	19	14
No of Males Enrolled	0	3	0	2	1	0	1	0	0	1
No of Females Enrolled	52	53	54	46	49	17	13	18	21	15
No of Students from Outside South Africa	0	0	0	0	0	0	1	0	0	0

Part D: Appendix – Instructions for Authors

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Author Guidelines

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Named authors must consent to publication. Authorship should be based on: (i) substantial contribution to conceptualisation, design, analysis and interpretation of data; (ii) drafting or critical revision of important scientific content; or (iii) approval of the version to be published. These conditions must all be met for an individual to be included as an author (uniform requirements for manuscripts submitted to biomedical journals; refer to www.icmje.org)

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Authors must provide evidence of Research Ethics Committee approval of the research where relevant. Ensure the correct, full ethics committee name and reference number is included in the manuscript.

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Preparing an article for anonymous review

To ensure a fair and unbiased review process, all submissions are to include an anonymised version of the manuscript. The exceptions to this requirement are Correspondence, Book reviews and Obituary submissions.

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- Mask self-citations by referring to your own work in third person.

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Submitted manuscripts that are not in the correct format specified in these guidelines will be returned to the author(s) for correction prior to being sent for review, which will delay publication.

General:

- Manuscripts must be written in UK English (this includes spelling).
- The manuscript must be in Microsoft Word or RTF document format. Text must be 1.5 line spaced, in 12-point Times New Roman font, and contain no unnecessary formatting (such as text in boxes). Pages and lines should be numbered consecutively.
- Please make your article concise, even if it is below the word limit.
- Qualifications, **full** affiliation (department, school/faculty, institution, city, country) and contact details of ALL authors must be provided in the manuscript and in the online submission process.
- Abbreviations should be spelt out when first used and thereafter used consistently, e.g. 'intravenous (IV)' or 'Department of Health (DoH)'.
- Numbers should be written as grouped per thousand-units, i.e. 4 000, 22 160.
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- Round brackets (parentheses) should be used, as opposed to square brackets, which are reserved for denoting concentrations or insertions in direct quotes.

If you wish material to be in a box, simply indicate this in the text. You may use the table format –this is the *only* exception. Please DO NOT use fill, format lines and so on.

Preparation notes by article type

Research

Guideline word limit: 3 000 words (excluding abstract and bibliography)

Research articles describe the background, methods, results and conclusions of an original research study. The article should contain the following sections: introduction, methods, results, discussion and conclusion, and should include a structured abstract (see below). The introduction should be concise – no more than three paragraphs – on the background to the research question, and must include references to other relevant published studies that clearly lay out the rationale for conducting the study. Some common reasons for conducting a study are: to fill a gap in the literature, a logical extension of previous work, or to answer an important question. If other papers related to the same study have been published previously, please make sure to refer to them specifically. Describe the study methods in as much detail as possible so that others would be able to replicate the study should they need to. Where appropriate, sample size calculations should be included to demonstrate that the study is not underpowered. Results should describe the study sample as well as the findings from the study itself, but all interpretation of findings must be kept in the discussion section. The conclusion should briefly summarise the main message of the paper and provide recommendations for further study.

- May include up to 6 illustrations or tables.
- A max of 20 - 25 references

Structured abstract

- This should be no more than 250 words, with the following recommended headings:
 - **Background:** why the study is being done and how it relates to other published work.
 - **Objectives:** what the study intends to find out
 - **Methods:** must include study design, number of participants, description of the research tools/instruments, any specific analyses that were done on the data.
 - **Results:** first sentence must be brief population and sample description; outline the results according to the methods described. Primary outcomes must be described first, even if they are not the most significant findings of the study.
 - **Conclusion:** must be supported by the data, include recommendations for further study/actions.
 - Please ensure that the structured abstract is complete, accurate and clear and has been approved by all authors. It should be able to be intelligible to the reader without referral to the main body of the article.
 - Do not include any references in the abstracts.

[Here](#) is an example of a good abstract.

Scientific letters/short reports

These are shorter length, scholarly research articles of no more than 1500 words. Single-institution, and/or studies with sample sizes <100 are better submitted as short reports.

Guideline word limit: 1500 words

- Abstract: Structured, of about 250 words, with the following recommended headings: Background, Objectives, Methods, Results, and Conclusion.
- May include only one illustration or table
- A maximum of 8 references

Forum articles

Are personal opinion pieces that address an area in health professions education that would be of interest to the readership. Forum pieces while reflecting the authors personal views, should be scholarly, and arguments well-supported.

- They should not exceed 1000 words
- Up to 5 references are allowed.

Short communications

Are very brief articles that share work in progress, lessons learnt or innovations in medical education

- They should be no more than 500 words in length
- A maximum of 3 references, and 1 table or figure.
- Short Communications should be structured under the following headings: Why was the idea necessary (Problem), What was tried (Approach) and What were the lessons learnt (Outcomes).

Correspondence (Letters to the Editor)

Guideline word limit: 400 words

Letters to the editor should relate either to a paper or article published by the AJHPE or to a topical issue of particular relevance to the journal's readership

- May include only one illustration or table
- Must include a correspondence address.

Obituaries

Guideline word limit: 400 words

Should be offered within the first year of the practitioner's death, and may be accompanied by a photograph.

Illustrations/photos/scans

- If illustrations submitted have been published elsewhere, the author(s) should provide evidence of consent to republication obtained from the copyright holder.
- Figures must be numbered in Arabic numerals and referred to in the text e.g. '(Fig. 1)'.
- Each figure must have a caption/legend: Fig. 1. Description (any abbreviations in full).
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- All illustrations (graphs, diagrams, charts, etc.) must be in PDF form.
- Ensure all graph axes are labelled appropriately, with a heading/description and units (as necessary) indicated. Do not include decimal places if not necessary e.g. 0; 1.0; 2.0; 3.0; 4.0 etc.
- Each image must be attached individually as a 'supplementary file' upon submission (not solely embedded in the accompanying manuscript) and named Fig. 1, Fig. 2, etc.

Tables Tables should be constructed carefully and simply for intelligible data representation. Unnecessarily complicated tables are strongly discouraged.

- Large tables will generally not be accepted for publication in their entirety. Please consider shortening and using the text to highlight specific important sections, or offer a large table as an addendum to the publication, but available in full on request from the author.
- Embed/include each table in the manuscript Word file - do not provide separately as supplementary files.
- Number each table in Arabic numerals (Table 1, Table 2, etc.) consecutively as they are referred to in the text.
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- Authors must verify references from original sources.
- Citations should be inserted in the text as superscript numbers between square brackets, e.g. These regulations are endorsed by the World Health Organization,^[2] and others.^[3,4-6]
- All references should be listed at the end of the article in numerical order of appearance in the Vancouver style (not alphabetical order).
- Approved abbreviations of journal titles must be used; see the [List of Journals in Index Medicus](#).
- Names and initials of all authors should be given; if there are more than six authors, the first three names should be given followed by et al.
- Volume and issue numbers should be given.
- First and last page, in full, should be given e.g.: 1215-1217 **not** 1215-17.
- Wherever possible, references must be accompanied by a digital object identifier (DOI) link). Authors are encouraged to use the DOI lookup service offered by [CrossRef](#):
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 - Provide as follows, e.g.: <https://doi.org/10.7196/07294.937.98x>

Some examples:

- *Journal references:* Price NC, Jacobs NN, Roberts DA, et al. Importance of asking about glaucoma. Stat Med 1998;289(1):350-355. <http://dx.doi.org/10.1000/hgjr.182>
- *Book references:* Jeffcoate N. Principles of Gynaecology. 4th ed. London: Butterworth, 1975:96-101.
- *Chapter/section in a book:* Weinstein L, Swartz MN. Pathogenic Properties of Invading Microorganisms. In: Sodeman WA, Sodeman WA, eds. Pathologic Physiology: Mechanisms of Disease. Philadelphia: WB Saunders, 1974:457-472.
- *Internet references:* World Health Organization. The World Health Report 2002 - Reducing Risks, Promoting Healthy Life. Geneva: WHO, 2002. <http://www.who.int/whr/2002> (accessed 16 January 2010).
- Legal references
- Government Gazettes:

National Department of Health, South Africa. National Policy for Health Act, 1990 (Act No. 116 of 1990). Free primary health care services. Government Gazette No. 17507:1514. 1996.

In this example, 17507 is the Gazette Number. This is followed by :1514 - this is the notice number in this Gazette.

- Provincial Gazettes:

Gauteng Province, South Africa; Department of Agriculture, Conservation, Environment and Land Affairs. Publication of the Gauteng health care waste management draft regulations. Gauteng Provincial Gazette No. 373:3003, 2003.

- Acts:

South Africa. National Health Act No. 61 of 2003.

- Regulations to an Act:

South Africa. National Health Act of 2003. Regulations: Rendering of clinical forensic medicine services. Government Gazette No. 35099, 2012. (Published under Government Notice R176).

- Bills:

South Africa. Traditional Health Practitioners Bill, No. B66B-2003, 2006.

- Green/white papers:

South Africa. Department of Health Green Paper: National Health Insurance in South Africa. 2011.

- Case law:

Rex v Jopp and Another 1949 (4) SA 11 (N)

Rex v Jopp and Another: Name of the parties concerned

1949: Date of decision (or when the case was heard)

(4): Volume number

SA: SA Law Reports

11: Page or section number

(N): In this case Natal - where the case was heard. Similarly, (C) would indicate Cape, (G) Gauteng, and so on.

NOTE: no. after the v

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